

NOTICE

All drawings located at the end of the document.

Resource Conservation and Recovery Act Post-Closure Care Permit Application

For U.S.D.O.E.-Rocky Flats Plant
Hazardous & Radioactive Mixed Waste

CO78900105

5 October 1990

Volume 1

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ADMIN RECORD

A-SW-0002

REVIEWED FOR CLASSIFICATION/U
By [Signature]
Date 1/10

Resource Conservation and Recovery Act Post-Closure Care Permit Application

For U.S.D.O.E.-Rocky Flats Plant
Hazardous & Radioactive Mixed Wastes

CO7890010526

5 October 1988

Volume III

Prepared by:

ROCKWELL INTERNATIONAL

North American Aerospace Operations

In Association with:

WESTON
MANAGERS DESIGNERS/CONSULTANTS



Chen & Assoc., Inc.

REVIEWED FOR CLASSIFICATION/UCM

By [Signature]
Date 4/1/92

~~Not For Public Dissemination~~

RCRA POST-CLOSURE CARE PERMIT
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NOTICE

This document (or documents) is oversized for 16mm microfilming, but is available in its entirety on the 35mm fiche card referenced below:

Document # 000285

Titled: Plate E-25: West Spray Field, Water Table
Within Surficial Materials APRIL 1968

Fiche location: A-SW-M8

NOTICE

This document (or documents) is oversized for 16mm microfilming, but is available in its entirety on the 35mm fiche card referenced below:

Document # 000285

Titled: Plate E-26: Solar Evaporation Ponds
Surficial Geology Map

Fiche location: A-SW-M8

NOTICE

This document (or documents) is oversized for 16mm microfilming, but is available in its entirety on the 35mm fiche card referenced below:

Document # 000285

Titled: Plate E-27 Solar Evaporation Ponds
Cross Section Location Lines and
Bedrock Geology

Fiche location: A-SW-M8

NOTICE

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Document # 000285

Titled: Plate E-28: Solar Evaporation Ponds
CROSS SECTIONS
A-A', B-B', C-C', D-D', E-E', F-F', G-G'

Fiche location: A-SW-M8

NOTICE

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Document # 000285

Titled: Plate F-29: Solar Evaporation Ponds
Top of Bedrock Elevation Beneath
Surficial Materials

Fiche location: A-SW-M9

NOTICE

This document (or documents) is oversized for 16mm microfilming, but is available in its entirety on the 35mm fiche card referenced below:

Document # 000285

Titled: Plate E-30: Water Table Elevations
at the Solar Ponds for April, 1987

Fiche location: A-SW-M9

NOTICE

This document (or documents) is oversized for 16mm microfilming, but is available in its entirety on the 35mm fiche card referenced below:

Document # 000285

Titled: Plate E-31: Water Table Elevations
at the Solar Ponds for June, 1987

Fiche location: A-SW-M9

NOTICE

This document (or documents) is oversized for 16mm microfilming, but is available in its entirety on the 35mm fiche card referenced below:

Document # 000285

Titled: Plate E-32: Water Table Elevations
at the Solar Ponds for August, 1987

Fiche location: A-SW-M9

NOTICE

This document (or documents) is oversized for 16mm microfilming, but is available in its entirety on the 35mm fiche card referenced below:

Document # 000285

Titled: Plate E-33: Water Table Elevations
at the Solar Ponds for November, 1987

Fiche location: A-SW-M9

NOTICE

This document (or documents) is oversized for 16mm microfilming, but is available in its entirety on the 35mm fiche card referenced below:

Document # 000285

Titled: Plate E-34: Water Table Elevations
at the Solar Ponds for April, 1988

Fiche location: A-SW-119

NOTICE

This document (or documents) is oversized for 16mm microfilming, but is available in its entirety on the 35mm fiche card referenced below:

Document # 000285

Titled: Plate E-35: Landfill Area - Proposed
Point of Compliance Map and
Detection Monitoring System

Fiche location: A-SW-MID

NOTICE

This document (or documents) is oversized for 16mm microfilming, but is available in its entirety on the 35mm fiche card referenced below:

Document # 000285

Titled: Plate E-36: West Spray Field
Proposed Point of Compliance
and Compliance Monitoring System

Fiche location: A-SW-M10

NOTICE

This document (or documents) is oversized for 16mm microfilming, but is available in its entirety on the 35mm fiche card referenced below:

Document # 000285

Titled: Plate E-37: Solar Ponds Area
Proposed Point of Compliance
and Compliance Monitoring System

Fiche location: A-SW-M10

NOTICE

This document (or documents) is oversized for 16mm microfilming, but is available in its entirety on the 35mm fiche card referenced below:

Document # 000285

Titled: Plate E-38: Rocky Flats Plant
Proposed Background Borehole
and Monitor Well Locations

Fiche location: A-SW-M10

SECTION F
PROCEDURES TO PREVENT HAZARDS

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Section F

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SECTION F

PROCEDURES TO PREVENT HAZARDS

The information provided in this section is submitted in accordance with the requirements of 40 CFR 270.14(b)(4), (5), (7), (8), and (9) and 6 CFR 100.41(a)(4), (5), (8), and (9). The section addresses the following subject areas.

- o General security provisions;
- o Inspection schedule;
- o Preparedness and prevention requirements; and
- o Preventive procedures, structures, and equipment.

F-1 SECURITYF-1a Security Procedures and Equipment

F-1a(1) 24-Hour Surveillance System

A 24-hour surveillance system is provided at the Rocky Flats Plant Site to monitor and control entry into the facility. The Plant Security Department has uniformed guards to provide protection service. Armed guards are stationed at

the entrances to the plant 24 hours per day to monitor vehicle and personnel traffic into the area.

All persons entering the plant must have an appropriate security badge. Visitors are allowed at the site only with prior approval and are issued a temporary badge by the guards prior to being admitted to the plant. The justification form that must be completed prior to entry is shown in Figure F-1. Badges must be shown to the guard along with a registered vehicle pass upon entering the main facility. All personnel must wear their badges fully displayed while on-site.

Visitors must be escorted within certain areas of the plant by a Rockwell International or Department of Energy (DOE) employee. All visitors must return their badges to the guard gate that they received the badge from prior to departing the site.

The gate guard posts are located on the east and west sides of the plant. The posts maintain 2-way radio and telephone communications with the plant protection dispatch station.

Figure F-1

Visitor Justification Form

JUSTIFICATION FOR VISIT TO ROCKY FLATS

| | | | | | |
|--|-------------------------|---|--|---|------------|
| To: Visitor Control, Bldg. 111, Ext. 2672/7328 72 Hours Prior Notice Required | | From: | | Ext: | |
| Name of Visitor: (Last name first) | | Home Address: | | Employer: | |
| Place and Date of Birth: | | Citizenship: | | Dates of Proposed Visit: | |
| TYPE OF VISIT: | | Classified <input type="checkbox"/> Unclassified <input type="checkbox"/> | | VISITOR IS: <input type="checkbox"/> Cleared <input type="checkbox"/> Uncleared | |
| RESPIRATORY PROTECTION REQUIREMENTS (See HSE 7.03, Section 4 for detailed instructions) | | Clearance Data: (Include Type, Number, Date) | | | |
| Purpose of Visit: | | Bldg. Access | | Room No.(s) | Escort(s): |
| Precautions taken to Prevent Unauthorized Disclosure of Classified Information: | | | | | |
| Other Pertinent Information or Special Limitations: | | | | | |
| APPROVED: | Building Superintendent | | | | Date: |
| | Physical Security | | | | Date: |
| | DOE/RFAO Security | | | | Date: |

RF-27380 (9/85) Destroy Previous Issues

Closed circuit television provides continuous monitoring of the four entry gates and selective monitoring of the hazardous waste facilities.

F-1a(2) Barrier and Means to Control Entry

The boundary of the Rocky Flats Plant Site is surrounded by a three strand barbed wire cattle fence. Signs have been posted identifying the land as a government reservation/restricted area. There are two gates in the fence located on the access roads, one on the west side and one on the east side of the plant. Access through these gates is controlled by armed guards 24 hours a day.

The production and support areas of the plant are surrounded by a six-foot high chain link fence, topped with two feet of three-strand barbed wire. There are also two main gates (Plate B-I) in this fence on the east and west sides of the plant. These gates are electrically operated by armed guards 24 hours a day. Within the production and support areas there are internal security areas that isolate classified information and nuclear material from the remaining controlled area of the plant. Guards patrol the controlled area 24 hours per day.

A four-foot high fence has been installed around the perimeter of the landfill. This fence has an access gate and posted warning signs. This fence and all other fences and gates are operated and maintained by the U.S. Department of Energy.

Maintenance requirements on all fences and gates will be performed by the U.S. Department of Energy, regardless of the activities at the solar evaporation ponds, present landfill, west spray field and original process waste lines.

The security measures are sufficient to meet the requirements of 6 CCR 1007-3, Section 265.14.

F-1a(3) Warning Signs

The Rocky Flats Plant Site is a high security area and is visibly posted as such. Signs legible from a distance of 25 feet are posted at the entrances to the site and every 150 feet on the perimeter fence. In addition, warning signs are posted on the fence surrounding the landfill. All signs are visible from all approach angles and state "Authorized Personnel Only; Keep Out."

F-1b Waiver

A waiver from the security requirements is not being requested.

F-2 INSPECTION SCHEDULE [CCR 100.41, 264.15;
40 CFR 270.14(b)(5), 264.15]

F-2a General Inspection Requirements

Rocky Flats personnel conduct regular inspections of the fences and gates encompassing the hazardous waste units and of the sampling (ex. pH, conductivity), monitoring (ex. Hnu, explosimeter), and personnel protective (ex. APRs, SCBAs) equipment. The inspections are performed in order to ensure that the equipment is properly maintained and functioning and that no discharges or leaks have occurred or have the potential to occur. As part of the Rocky Flats hazardous waste training course, personnel have received general training concerning hazardous waste inspections. In addition, these personnel have been instructed by formal and on-the-job training on how to conduct the specific inspections in their area. When interim status closure units are approximately six months away from Certification

of Closure, specific training and inspection requirements will be developed for personnel that will be conducting Post-Closure Care and monitoring. These requirements and programs will be used to train personnel conducting Post-Closure Care and monitoring, and will be incorporated as an appendix to this Post-Closure Care Permit.

The construction and operation of active treatment units may be necessary in the future. Any such system treating waste defined as hazardous will be included in this permit, along with details regarding waste analyses, inspections, personnel training, contingency plans, and closure. These details cannot be provided until designs for these facilities have been approved by CDH and EPA. Once designs have been approved, then the Post-Closure Care Permit will require updating in order to provide the necessary details.

Inspection checklists will identify any potential problems that may occur at each waste management unit. Problems that are noted during the inspection will require immediate remedial action. Any actions taken will be described on the inspection checklist where the problem was noted.

F-2b Specific Process Inspection Requirements

The specific inspection requirements for the units covered under this post-closure care plan are outlined below.

F-2b(1) Solar Evaporation Ponds

All liquids and sludge will have been removed from the solar evaporation ponds prior to completion of closure. Upon removal of the liquids and sludge, the solar evaporation ponds will be regraded and a cap will be installed. Inspections of the cap, vegetation, drainage and diversion system, and the ground-water monitoring system will be conducted on a quarterly basis during the post-closure care period.

Storage tanks may be constructed to contain the interceptor trench water and to replace Pond 207-B South. Post-closure care inspections will be done daily of the tank system and secondary containment structure in accordance with CCR 264.194 and 40 CFR 264.194. The inspections will be done to ensure that the tank is operating in accordance with design specifications and to provide early detection for leaks, cracks, or wall thinnings. A description of Rockwell

International's daily tank inspection procedures to be performed is located in Appendix F-1.

F-2b(2) Present Landfill

Hazardous constituent disposal in the landfill was eliminated November, 1986. Solid wastes will no longer be accepted at the landfill after June 1, 1989. During closure, the drainage ditches will be improved and a cap, a comprehensive ground-water monitoring system and a passive gas collection system will be installed. Monthly inspections of the cap and drainage system will be conducted the first year after the cap has been installed to ensure that settlement or subsidence of the cap and drainage system does not occur, and that the passive gas collection system and ground-water monitoring system are adequate. Following the first year, quarterly inspections will be conducted of the cap, drainage system, ground-water monitoring system and passive gas collection system.

Should variations in the water quality from the landfill be sufficient to require treatment of the east pond waters, a treatment system will be constructed to handle contaminated waters at the plant site. If it is constructed, a

description of the inspections to be performed will be located in Appendix F-2.

F-2b(3) West Spray Field

Dependent on the extent of soil contamination, a cap may be installed over the west spray field. To evaluate the site during the post-closure care period, inspections of the cap, vegetation, drainage and diversion system, if installed, and the ground-water monitoring system will be conducted on a quarterly basis.

F-2b(4) Original Process Waste Tanks

It is anticipated that a cap will be installed over some buried storage tanks and underground piping. To evaluate the site during the post-closure care period, inspections of the cap, vegetation, drainage and diversion system, if installed, and the ground-water monitoring system will be conducted on a quarterly basis.

F-2b(5) Security, Safety, and Emergency Equipment
Inspections

The specific procedures for security inspections are detailed in documents entitled "Physical Protection of Security Interest" and "Plant Protection General Orders." These documents are maintained by the plant security force at Rocky Flats and are available for review by approved personnel.

Much of the on-site safety equipment that may be used in the Post-Closure Care period is inspected by the Rocky Flats Fire Department. This includes the fire phone system, the on-site ambulances, the emergency self-contained breathing apparatuses (SCBAs), manual and automatic fire alarms, fire extinguishers, fire hydrants, smoke detectors, and firehoses. These items are checked to insure that they are functioning properly and no deterioration has occurred.

Emergency eyewashes and safety showers are inspected by a division of the Custodial Department. Each item is checked monthly to insure that it is in good operating condition. They are then tagged with the inspection date and the name of a person to contact if building personnel notice a malfunction between inspections.

F-2c Remedial Action

Any problems noted during the inspection procedure are brought to the attention of the Rockwell RCRA/CERCLA program manager and will be corrected in a timely manner. The remedial actions taken are described on the inspection checklist where the problem was first noted. The item is dated when the remedial action is complete.

F-2d Inspection Logs

Inspection logs currently anticipated for use at the solar evaporation ponds, present landfill, west spray field and original process waste lines are presented in Figures 2, 3, 4 and 5, respectively. These forms will be updated and finalized as the units approach certification of closure.

Key areas to be observed are noted on the form, with space provided for additional observations. The quarterly inspections will be conducted in February, May, August and November. This inspection schedule will allow regularly scheduled inspections to be conducted after normally occurring periods of high winds in January and February, rain and snow in April and May, and summer thunderstorms.

Special visual inspections will be conducted, as appropriate, following severe rainstorms of high intensity rainfall (for example, the one-hour, 100-year storm event which accumulates 2.55 inches of rain in an hour) or tornadoes that may damage the integrity of the caps at the landfill, the solar ponds, and the original process waste lines.

The post-closure care permit and inspection records for the solar evaporation ponds, present landfill, west spray field and original process waste lines will be kept at one location at the Rocky Flats Plant:

- o Building 115, Rocky Flats Area Office, U.S. Department of Energy

The post-closure care permit and the inspection records will be kept on file for the operating life of the facility. The person responsible for storing and updating the copy of the post-closure care permit and storing and maintaining the inspection records kept in Building 115 is:

Mr. Albert E. Whiteman
Area Manager

His address and phone number area:

U.S. Department of Energy
Rocky Flats Plant
P.O. Box 928
Golden, Colorado 80402
Phone: (303) 966-2025

Mr. Whiteman is also responsible for updating other copies of the post-closure care permit held off-site by sending additions or revisions by registered mail.

The inspection logs for security, emergency response and safety equipment are maintained by the department responsible for the inspections as described in Section F-2b(5). The logs for inspection of this equipment are included in Appendix F-3.

FIGURE 2

SOLAR EVAPORATION PONDS POST-CLOSURE INSPECTION

NOTE: All "Yes" responses require action be taken. Record the action taken in the appropriate column. All such problems require notification of the RCRA/CERCLA program manager.

Name of Inspector _____ Date _____ Time _____

| INSPECTION ITEM | | YES | NO | ACTION-TAKEN |
|-----------------|--|-------|-------|--------------|
| o | Cap | | | |
| - | Settlement | _____ | _____ | _____ |
| - | Animal borrows | _____ | _____ | _____ |
| - | Ponding of water | _____ | _____ | _____ |
| - | Cracking | _____ | _____ | _____ |
| - | Visible signs of erosion | _____ | _____ | _____ |
| o | Vegetation | | | |
| - | Grass washed out by erosion | _____ | _____ | _____ |
| - | Spots that appear to be dying | _____ | _____ | _____ |
| - | Trees or bushes growing | _____ | _____ | _____ |
| - | Other deep rooted vegetation | _____ | _____ | _____ |
| o | Drainage and Diversion System Maintenance | | | |
| - | Visible signs of erosion | _____ | _____ | _____ |
| - | Ponding of water | _____ | _____ | _____ |
| - | Debris accumulation | _____ | _____ | _____ |
| - | Animal borrows | _____ | _____ | _____ |
| - | Trees or bushes growing | _____ | _____ | _____ |
| o | Monitoring Wells | | | |
| - | Monitoring well caps, surface seals and locks in place | _____ | _____ | _____ |
| - | Evidence of damage to monitoring wells | _____ | _____ | _____ |

FIGURE 2 (continued)

SOLAR EVAPORATION PONDS POST-CLOSURE INSPECTION

Name of Inspector _____ Date _____

| INSPECTION ITEM | YES | NO | ACTION-TAKEN |
|----------------------------------|-------|-------|--------------|
| o Ground-water Collection System | | | |
| - Blockage | _____ | _____ | _____ |
| - Pump operational | _____ | _____ | _____ |

COMMENTS _____

Inspector Signature _____

Authorized person responsible for post-closure maintenance
to review report and sign below.

Name (print) _____

Signature _____

Date _____

FIGURE 3

PRESENT LANDFILL POST-CLOSURE INSPECTION

NOTE: All "Yes" responses require action be taken. Record the action taken in the appropriate column. All such problems require notification of the RCRA/CERCLA program manager.

Name of Inspector _____ Date _____ Time _____

| INSPECTION ITEM | | YES | NO | ACTION-TAKEN |
|-----------------|---|-------|-------|--------------|
| o | Cap | | | |
| - | Settlement | _____ | _____ | _____ |
| - | Animal Borrows | _____ | _____ | _____ |
| - | Ponding of water | _____ | _____ | _____ |
| - | Cracking | _____ | _____ | _____ |
| - | Visible signs of erosion | _____ | _____ | _____ |
| - | Discoloration due to leachate penetration | _____ | _____ | _____ |
| o | Vegetation | | | |
| - | Grass washed out by erosion | _____ | _____ | _____ |
| - | Spots that appear to be dying | _____ | _____ | _____ |
| - | Trees or bushes growing | _____ | _____ | _____ |
| - | Other deep rooted vegetation | _____ | _____ | _____ |
| o | Drainage and Diversion System Maintenance | | | |
| - | Visible signs of erosion | _____ | _____ | _____ |
| - | Ponding of water | _____ | _____ | _____ |
| - | Debris accumulation | _____ | _____ | _____ |
| - | Animal borrows | _____ | _____ | _____ |
| - | Trees or bushes growing | _____ | _____ | _____ |
| o | Ground-water Collection System | | | |
| - | Blockage | _____ | _____ | _____ |
| - | Pump operational | _____ | _____ | _____ |

FIGURE 3 (continued)

PRESENT LANDFILL POST-CLOSURE INSPECTION

Name of Inspector _____ Date _____

| INSPECTION ITEM | YES | NO | ACTION-TAKEN |
|--|-------|-------|--------------|
| o Gas Monitoring System | | | |
| - Subsidence around vent pipes | _____ | _____ | _____ |
| - Explosimeter measurements | _____ | _____ | _____ |
| - Damage to vent pipes | _____ | _____ | _____ |
| o East Impoundment | | | |
| - Water level | _____ | _____ | _____ |
| o Monitoring Wells | | | |
| - Monitoring well caps, surface seals and locks in place | _____ | _____ | _____ |
| - Evidence of damage to monitoring wells | _____ | _____ | _____ |
| o Benchmarks | | | |
| - Visual evidence of displacement | _____ | _____ | _____ |
| o Security | | | |
| - Gates open | _____ | _____ | _____ |
| - Gates unlocked | _____ | _____ | _____ |
| - Fences in disrepair | _____ | _____ | _____ |
| - Signs missing | _____ | _____ | _____ |

FIGURE 3 (continued)

PRESENT LANDFILL POST-CLOSURE INSPECTION

Name of Inspector _____ Date _____

COMMENTS _____

Inspector Signature _____

Authorized person responsible for post-closure maintenance
to review report and sign below.

Name (print) _____

Signature _____

Date _____

FIGURE 4

WEST SPRAY FIELD POST-CLOSURE INSPECTION

NOTE: All "Yes" responses require action be taken. Record the action taken in the appropriate column. All such problems require notification of the RCRA/CERCLA program manager.

Name of Inspector _____ Date _____ Time _____

| INSPECTION ITEM | YES | NO | ACTION-TAKEN |
|--|-------|-------|--------------|
| o Cap (if installed) | | | |
| - Settlement | _____ | _____ | _____ |
| - Ponding of water | _____ | _____ | _____ |
| - Cracking | _____ | _____ | _____ |
| - Visible signs of erosion | _____ | _____ | _____ |
| - Animal Borrows | _____ | _____ | _____ |
| o Vegetation | | | |
| - Grass washed out by erosion | _____ | _____ | _____ |
| - Spots that appear to be dying | _____ | _____ | _____ |
| - Trees or bushes growing | _____ | _____ | _____ |
| - Other deep rooted vegetation | _____ | _____ | _____ |
| o Drainage and Diversion System Maintenance | | | |
| - Visible signs of erosion | _____ | _____ | _____ |
| - Ponding of water | _____ | _____ | _____ |
| - Debris accumulation | _____ | _____ | _____ |
| - Animal borrows | _____ | _____ | _____ |
| - Trees or bushes growing | _____ | _____ | _____ |
| o Monitoring Wells | | | |
| - Monitoring well caps, surface seals and locks in place | _____ | _____ | _____ |
| - Evidence of damage to monitoring wells | _____ | _____ | _____ |

FIGURE 4 (continued)

WEST SPRAY FIELD POST-CLOSURE INSPECTION

Name of Inspector _____ Date _____

COMMENTS _____

Inspector Signature _____

Authorized person responsible for post-closure maintenance
to review report and sign below.

Name (print) _____

Signature _____

Date _____

FIGURE 5

ORIGINAL PROCESS WASTE LINES POST-CLOSURE INSPECTION

NOTE: All "Yes" responses require action be taken. Record the action taken in the appropriate column. All such problems require notification of the RCRA/CERCLA program manager.

Name of Inspector _____ Date _____ Time _____

| INSPECTION ITEM | | YES | NO | ACTION-TAKEN |
|-----------------|--|-------|-------|--------------|
| o | Cap | | | |
| - | Settlement | _____ | _____ | _____ |
| - | Animal borrows | _____ | _____ | _____ |
| - | Ponding of water | _____ | _____ | _____ |
| - | Cracking | _____ | _____ | _____ |
| - | Visible signs of erosion | _____ | _____ | _____ |
| o | Vegetation | | | |
| - | Grass washed out by erosion | _____ | _____ | _____ |
| - | Spots that appear to be dying | _____ | _____ | _____ |
| - | Tress or bushes growing | _____ | _____ | _____ |
| - | Other deep rooted vegetation | _____ | _____ | _____ |
| o | Drainage and Diversion System Maintenance | | | |
| - | Visible signs of erosion | _____ | _____ | _____ |
| - | Ponding of water | _____ | _____ | _____ |
| - | Debris accumulation | _____ | _____ | _____ |
| - | Animal borrows | _____ | _____ | _____ |
| - | Trees or bushes growing | _____ | _____ | _____ |
| o | Monitoring Wells | | | |
| - | Monitoring well caps, surface seals and locks in place | _____ | _____ | _____ |
| - | Evidence of damage to monitoring wells | _____ | _____ | _____ |

FIGURE 5 (continued)

ORIGINAL PROCESS WASTE LINES POST-CLOSURE INSPECTION

Name of Inspector _____ Date _____

COMMENTS _____

Inspector Signature _____

Authorized person responsible for post-closure maintenance
to review report and sign below.

Name (print) _____

Signature _____

Date _____

F-3 PREPAREDNESS AND PREVENTION REQUIREMENTS
[CCR 100.41; 40 CFR 260.14(b)(6)]F-3a Equipment Requirements

F-3a(1) Internal Communications

All personnel at the hazardous waste units are able to request emergency assistance if needed. At remote locations, such as the solar evaporation ponds, west spray field, and landfill, this is done by two-way radio contact over reserved channels with the Fire Department and with Plant Security. Hazardous waste units within the process boundary (Plate B-I) can use the plant telephone system (extension 2911) or the fire phones to report any emergencies.

The fire alarm system and the plant public address (P.A.) system are used to notify facility personnel of an emergency situation and provide immediate emergency instruction to personnel. Bullhorns are kept by Plant Security and the on-site Fire Department to act as backups for the P.A. system if it should fail. The Building Supervisor, the Plant Security dispatcher and the Fire Department dispatcher

all have access to the P.A. system to make announcements concerning an emergency situation.

F-3a(2) External Communications

Off-site communications with Federal and State agencies, hospital facilities and other agencies are maintained by telephone, two-way radio systems, and the Metropolitan Emergency Telephone System (METS). The METS is a Denver Metro Area emergency notification and information system with approximately 50 subscribers that include law enforcement, government agencies, emergency organizations and news media.

F-3a(3) Emergency Equipment

Rocky Flats emergency equipment consists of fire control equipment, spill control equipment and decontamination equipment. Section G details the number and types of emergency control equipment available at the site.

F-3a(4) Water For Fire Control

The Rocky Flats Plant has a series of fire hydrants available to provide water of adequate volume and pressure for fire control. See Section G of the HRMW RCRA Part B Permit Application for the location of the fire hydrants and for information on pressure and flow to these hydrants. The Rocky Flats Fire Department has a pumper tank truck to provide a supply of water to outlying areas not within the fire hydrant distance.

F-4 PREVENTIVE PROCEDURES, STRUCTURES, AND EQUIPMENT
[CCR 100.41; 40 CFR 270.14(b)(8)]F-4a Maintaining the Caps and Vegetation

The post-closure maintenance plan for the caps and vegetation will be integrated with the post-closure inspection plan. Appropriate maintenance will be provided as the need is indicated by visual inspections.

The surface of the caps will be stabilized during closure to decrease erosion by wind and water and contribute to the development of a stable surface environment. This will be

accomplished by establishing a vegetative cover and/or placing a gravel or paved surface on the caps.

If needed, revegetation of the caps will be conducted by seeding with a mixture of native grasses. Due to the nature of native grasses, the cap will not be fertilized the first year. The cap will only be fertilized on an as needed basis. In order to not disturb the cap, the native grasses will not be mowed. The root length of the native grasses will not penetrate beyond the 30-mil HDPE liner that will be installed as part of the cap. Some periodic reseeding and irrigation will be conducted, if necessary, as indicated by visual inspections.

Replacement of cap soil necessary due to settlement or erosion loss will be conducted as necessary based on visual inspections. Replacement soil will be similar to the original material used. The cap soil, if available, will consist of on-site borrow material (silty and sandy clays) taken from the Rocky Flats alluvium. Details of the solar evaporation ponds, landfill, and original process waste lines cap designs are presented in the Closure Plans located in Appendix I-2, I-3, and I-5, respectively. Cap settlement at the solar ponds and original process waste lines is

anticipated to be minimal since: (1) no compressible wastes will remain in place; (2) the caps will be compacted; and (3) the caps will be stabilized with vegetation and/or gravel or paved surfacing.

Settlement of the present landfill cap is anticipated to occur. Settlement may be the cause of surface depressions, allowing water to pond and the cap to crack and erode. In order to measure the amount of settlement, settlement monuments will be installed, initially surveyed in, and then resurveyed on a yearly basis. Required maintenance may include regrading localized areas, replacing cap soil in localized areas and revegetating the surface.

A rodent and insect control program will be implemented if indicated to be necessary by the visual inspections.

F-4b Drainage and Diversion System

Site Drainage

Site operations are designed to minimize the exposure of on-site waste management units (i.e., solar evaporation ponds and original process waste lines) to runoff. Site drainage is designed to handle a ten-year, 24-hour storm so the site

is effectively drained during and immediately after precipitation events. Figure B-8 details the overall site drainage system and drainage patterns.

North Walnut Creek, South Walnut Creek, and Woman Creek drain the Rocky Flats Plant site. All of these are intermittent streams. North Walnut Creek receives storm water runoff from the north side of the Plant site. Holding Pond A-3 on North Walnut Creek is used to impound this surface runoff for analysis prior to discharge. A second control point, holding Pond A-4, is located downstream.

South Walnut Creek receives storm water runoff from the central portion of the Plant. This water is diverted through a culvert system to Pond B-4 and then to Pond B-5 where the water is impounded for analysis prior to controlled off-site discharge.

Surface runoff water from the south side of the Plant is collected in an interceptor ditch and flows to Pond C-2 where the water is impounded and analyzed before discharge off-site. Woman Creek in the south drainage is isolated from this system. Pond C-1 is used as a monitoring point for Woman Creek.

The ponds serve as sampling stations along these creeks to monitor the runoff from the plant site. Analyses are performed prior to discharge, during discharge, and after a major precipitation event.

Prior to discharge from Ponds A-4, B-5 and C-2, the water is sampled and analyzed for gross alpha, gross beta, gamma emitting isotopes, Pu-239 and 240, U-233, 234 and 238, Am-241, tritium, pH, nitrates and nonvolatile suspended solids. The water will not be discharged if the Plant action level for any parameter is exceeded. Action levels for each parameter at the sampling locations are shown in Table F-1.

Water is also sampled continuously and collected daily from the outfall of Pond C-1 and collected from Walnut Creek at the Indiana Street sampling station when there is sufficient flow. Once a week, the samples at Pond C-1 and Walnut Creek at Indiana Street are analyzed for tritium.

The ITW storage tank(s) will be located within impermeable berms to protect them from coming into contact with runoff and to prohibit the accidental migration of any spilled material by runoff transport. Liquids that accumulate in any of the bermed areas will be sampled to determine if the

TABLE F-1

SURFACE WATER SAMPLING PARAMETERS AND ACTION LEVELS

| <u>Location</u> | <u>Parameter</u> | <u>Action Level (pCi/l)*</u> |
|------------------|------------------------------|------------------------------|
| Pond A-3 | Gross alpha | 40 |
| | Gross beta | 50 |
| | Gamma emitting isotopes | Above background |
| | Pu-239, 240 | 0.5 |
| | ^3H | 1500 |
| | NO_3 as N | 10.0 mg/l |
| | pH | 6.0-9.0 S.U. |
| Pond B-3 | Gross alpha | 40 |
| | Gross beta | 50 |
| | Gamma emitting isotopes | Above background |
| | ^3H | 1500 |
| | pH | 6.0-9.0 S.U. |
| | | |
| Pond A-4, B-5 | Gross alpha | 40 |
| | Gross beta | 50 |
| | Gamma emitting isotopes | Above background |
| | Pu-239, 240 | 0.1 |
| | U-233, 234, 238 | 5.0 |
| | Am-241 | 0.1 |
| | ^3H | 1500 |
| | NO_3 as N | 10.0 mg/l |
| | pH | 6.0-9.0 S.U. |
| | Nonvolatile suspended solids | 100 mg/l |
| | | |
| Walnut Creek | Gross alpha | 40 |
| | Gross beta | 50 |
| | Pu-239, 240 | 0.02 |
| | ^3H | 1000 |

liquid is contaminated. If contaminated, the liquid will be pumped into drums and handled as hazardous waste. If the liquid is not contaminated, it is pumped to the storm drainage system.

Solar Evaporation Ponds

A surface drainage and diversion system for the solar evaporation ponds will be incorporated in the final design for the cap (Appendix I-2). The drainage systems will be inspected for evidence of erosion and blockage on a quarterly basis. If the surface water drainage system becomes impaired as a result of erosional damage, an evaluation will be made at that time to determine the best solution for the problem. If blockage impairs the effectiveness of the drainage system, it will be removed in a timely manner.

Present Landfill

Modifications to the existing drainage and diversion system that diverts surface runoff water around the landfill and into the unnamed tributary east of the east pond will be made during closure of the landfill. The drainage systems will be inspected for evidence of erosion and blockage on a

monthly basis the first year and on a quarterly basis subsequently. If the surface water drainage system becomes impaired as a result of erosional damage, an evaluation will be made at that time to determine the best solution for the problem. If blockage impairs the effectiveness of the drainage system, it will be removed in a timely manner.

If it becomes evident that the surface runoff riprap channel or the discharge pipe which leads from the landfill and discharges to the east pond becomes blocked, the blockage will have to be excavated and removed, and the drainage system redesigned.

During closure of the landfill, the water elevation in the east pond will be lowered to a maximum elevation of about 5915. This maximum pool elevation will be maintained during post-closure resulting in approximately 11 acre-feet of excess storage in the pond. This excess storage will hold all the runoff from the 100-year design storm. Excess pond water will be spray evaporated, pumped to an existing NPDES permitted discharge point or discharged under a new NPDES permit for the east pond. Final excess storage volume and water elevations will be determined during final design.

West Spray Field

The need for a drainage and diversion system for the west spray field has not been determined at this time. The need will be evaluated subsequent to completion of site investigations and engineering studies. If a surface drainage and diversion system is installed, it will be inspected on a quarterly basis for evidence of erosion and blockage.

Original Process Waste Lines

The need for a drainage and diversion system for the original process waste lines has not been determined at this time. The need will be evaluated subsequent to completion of the tank system survey and adjacent soils characterization study. If a surface drainage and diversion system is installed, it will be inspected for evidence of erosion and blockage on a quarterly basis.

F-4c Ground-Water Monitoring System Maintenance

The post-closure maintenance plan for the ground-water monitoring system (Section E) will be integrated with the post-closure inspection plan and use of the wells.

Appropriate maintenance will be provided as the need is indicated.

The visual inspections may indicate the need for repairing or replacing components of the well system, such as well caps, surface seals or locks.

Usage of the wells for sampling the ground water may indicate the need for replacing entire wells or repairing or replacing components of the well system, such as pumps or casings. The inability to obtain adequate ground-water samples may indicate repairs or replacement are required.

The existing ground-water monitoring wells have been installed to meet the requirements of 40 CFR 265.90. Replacement of the wells is not anticipated to be necessary. If required, however, any well or well component replacements will also meet the requirements of 40 CFR 265.90.

F-4d Leachate System Maintenance

Collecting, removing and treating leachate is only required at facilities that have a leachate collection and removal

system in place during operation (U.S. Environmental Protection Agency, 1981).

Solar Evaporation Ponds

A leachate collection and treatment system is not and has not been present at the solar evaporation ponds. Therefore, a leachate collection and treatment system is not required at this facility for closure and will not be present during post-closure. A ground-water collection system is, however, currently in place northeast of the solar evaporation ponds. Monitoring of the system takes place on a quarterly basis and is addressed in Section E. If it is discovered that the french drain has become blocked, the drain will be excavated and the blockage removed in a timely manner.

Present Landfill

The existing leachate system at the present landfill is buried under the landfill. It does not collect leachate and has been abandoned. Therefore, no maintenance on the system will be performed. A ground-water collection system will, however, be constructed at the downstream toe of the final landfill cover (see Closure Plan in Appendix I-3). The collection system will be a gravel drain excavated through the surface colluvial and alluvial material into the

underlying claystone bedrock. The drain will lower water levels within the landfill and collect potentially impacted ground-water flows within the surface soils and shallow bedrock. Collected water will be pumped to the east pond area for storage and evaporation.

The proposed ground-water collection system is estimated to have a discharge of about one gallon per minute and will be monitored on a quarterly basis. If blockage impairs the effectiveness of the collection system, the gravel drain will be excavated and the blockage will be removed in a timely manner.

Should variations in the water quality from the landfill be sufficient to require treatment of the east pond waters, a treatment system will be constructed to handle contaminated waters at the plant site. Prior to construction, the closure plan located in Appendix I-3 and the Post-Closure Care Permit will be amended. The treatment system design and management practices will conform to CCR and 40 CFR regulations.

West Spray Field

A leachate collection and treatment system is not present at the west spray field. Should variations in the ground-water quality during the post-closure care period from the West Spray Field be sufficient to require treatment, then a ground-water collection and treatment system will be designed. The Closure Plan for the west spray field (Appendix I-4) and the Post-Closure Care Permit will be amended at that time.

Original Process Waste Lines

A leachate collection and treatment system is not present along the original process waste lines. Should variations in the ground-water quality during the post-closure care period from the OPWL be sufficient to require treatment, then a ground-water collection and treatment system will be designed. If such a system is required in the future, the Closure Plan (Appendix I-5) and Post-Closure Care Permit will be amended as necessary.

F-4e Gas System Maintenance

Of the units undergoing interim status closure, only the present landfill requires a system for appropriate

management of gases generated by the unit. If gas collection systems are found to be needed at other units undergoing interim status closure, the units will be reexamined and the respective closure plans and Post-Closure Care Permit will be amended as necessary.

During the first year, the passive gas vent system will be monitored quarterly with an explosimeter for a gross determination of methane and/or other combustible vapors and a photoionization detector for volatile organic analyses (VOAs) and hydrogen sulfide. Approximately three of the gas vents will be consistently sampled once a year for the duration of the post-closure care period using a sampling pump and teflon bag. The locations of the sampled vents will be determined upon cap completion. In addition to analyzing for the VOA Hazardous Substance List (HSL) and methane (CH_4), the samples will be analyzed by a GC for hydrogen sulfide, a hazardous constituent listed in 40 CFR 261 Appendix VIII. After the first year, all of the vents will be monitored annually with the explosimeter and photoionization detector. If noticeable increases in gas levels and contaminant concentrations occur, the passive gas venting system will be re-evaluated and an active venting system, flaring, or an air filter system will be examined.

F-4g Personnel Protective Equipment

Plant personnel are directed by Industrial Hygiene and Industrial Safety to wear the appropriate safety equipment for a specific working area. All routine sampling, monitoring and personal protective equipment for the landfill, original process waste lines, west spray field and solar evaporation ponds, in addition to the extensive ground-water and surface water monitoring program described in Section E, is located in Building 881. Each employee involved in post-closure care of the hazardous waste units are responsible for obtaining and ensuring the proper fit of each piece of safety equipment. If an employee notices a defect, it is that employee's responsibility to replace the equipment and notify the appropriate personnel to facilitate timely repair. Each employee is also responsible for notifying each individual up the chain of command as to the nature and the corrective action necessary for the safe completion of the task in question. To facilitate this process all employees are trained in the safe operating practices to be used in handling hazardous and radioactive mixed wastes. The Rocky Flats Plant maintains on-site a large inventory of monitoring instruments which are

available from the Health, Safety and Environment Department.

The Plant Fire Department (Building 331) has a large inventory of personnel protective equipment for use in any or all emergency response situations. This includes Class 1 fire gear for all firefighters consisting of polyvinyl chloride (PVC) hip boots, self-contained breathing apparatuses (SCBAs), and helmets. There are also six fully encapsulating suits (two butyl rubber suits, two chlorinated polyethylene suits, and two PVC suits). In addition, there are a number of SCBAs located in the production buildings on the plant. The locations of these units are indicated in Section G of the HRMW RCRA Part B Permit Application.

REFERENCES

U.S. Environmental Protection Agency, 1981: U.S. Environmental Protection Agency, 1981, Reprinted 1984, with Addendum, "Standards Applicable to Owners and Operators of Hazardous Waste Treatment, Storage and Disposal Facilities under RCRA, Subtitle C, Section 30004, Closure and Postclosure-Interim Status Standards [40 CFR 265, Subpart (G)]," Report SW-912.

SECTION G
CONTINGENCY PLAN

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SECTION G

POST-CLOSURE CARE AND MONITORING
CONTINGENCY PLAN

G-1 GENERAL INFORMATION [CCR 264.52, 264.53;
40 CFR 264.52, 264.53]

The Rocky Flats plant is a government owned facility that is contractor operated. It is part of a nation-wide nuclear weapons complex administered by the U.S. Department of Energy (DOE) and operated by Rockwell International. Its primary mission is producing plutonium components for nuclear weapons. Production activities involve the fabrication of plutonium, uranium, beryllium, and stainless steel parts. Other activities include chemical processing to recover plutonium from scrap metal and research and development work in a number of areas including metallurgy, machining, assembly, nondestructive testing, coatings, remote engineering, chemistry, and physics. Parts made at the plant are shipped elsewhere for final assembly.

The plant is a 350-acre complex of over 90 buildings of manufacturing, chemical processing, laboratory, and support facilities. Plant property covers almost 11 square miles, occupying Sections 1 through 4 and 9 through 15 of R70W, T2S

of Jefferson County, Colorado. It is located 16 miles northwest of Denver and nine to 12 miles from the communities of Boulder, Golden and Arvada. Access to the site is from Colorado Highway 93 on the west side and Jefferson County Highway 17 (Indiana Street) on the east. Figure G-1 shows all the major features at the Rocky Flats site. Plate B-I shows the locations of the hazardous waste units requiring post-closure care.

Generally, surface water drains to the east. It is handled through a series of holding ponds (Figure B-6) which discharge to natural drainage channels.

This plan outlines the response and reporting procedures to be followed for an incident involving one of the hazardous waste units requiring post-closure care.

A detailed RCRA Contingency Plan applicable to all hazardous waste management activities at the Rocky Flats Plant is found in Section G of the HRMW RCRA Part B Permit. This permit is on file in Building 115 of the Rocky Flats Plant under the care of:

A.E. Whiteman
P.O. Box 928
Golden, Colorado 80402

This document is a contingency plan specifically applicable to units undergoing RCRA Post-Closure Care and monitoring and is, therefore, necessarily less inclusive than the RCRA Contingency Plan. Please see the RCRA Contingency Plan for details regarding contingency actions, reporting requirements, plan review, emergency equipment, and emergency agreements. There are no reporting requirements or emergency actions in this plan that conflict with the RCRA Contingency Plan.

G-2 EMERGENCY DIRECTORS [CCR 264.52(d), 264.55;
40 CFR 264.52(d), 264.55]

The Emergency Director is responsible for the implementation and coordination of the site contingency plan. He/she is responsible for determining the extent of the emergency and assessing hazards to human health and the environment. All personnel which may serve as Emergency Director (ED) are thoroughly familiar with all aspects of the Contingency Plan, site operations and activities. They have the authority to commit the resources necessary to carry out the Plan.

An Emergency Director is available 24 hours a day at the site. If the Emergency Director is injured or unable to respond during an incident, the Alternate Shift Superintendent can be contacted using the ringdown system, which is located in the Emergency Operations Center. The ringdown system is further discussed in Section G-4a.

A list of all those who may serve as Emergency Director, including addresses and office and home telephone numbers is kept on file at the plant site.

G-3 IMPLEMENTATION OF THE PLAN [CCR 264.52(a); 40 CFR 264.52(a)]

The Emergency Director's decision to implement the Contingency Plan depends on whether or not an incident presents an imminent threat to human health or the environment.

The Plan would be implemented in the following situations:

- o A fire and/or explosion that meets any of the following criteria:
 - The fire could cause the release of toxic fumes;

- The fire has the potential to spread and ignite hazardous materials or cause heat induced reactions;
 - Use of water or a chemical fire suppressant in fighting the fire could result in contaminated runoff;
 - An explosion has occurred or has the potential to occur.
- o Spills or material releases of hazardous waste to the air, soil, or surface water in the following cases:
 - The release is reportable per criteria specified under CERCLA (in 40 CFR 302.4);
 - Radioactive mixed waste is released.

The plan could be implemented in situations other than those outlined above at the discretion of the Emergency Director.

G-4 EMERGENCY RESPONSE PROCEDURES

Response procedures vary from incident to incident as to specific details. However, several phases of response efforts will be common to all incidents. The phases of response detailed in this plan include the following:

- o Discovery and notification;
- o Identification of released materials;
- o Assessment;
- o Control procedures;

- o Storage and treatment of released materials; and
- o Measures to prevent recurrence.

G-4a Notification

Upon discovery of a release of materials or fire, all Rocky Flats personnel are instructed to notify their supervisor. The supervisor will then notify on-site response authorities using one of the methods discussed below. If the danger to personnel is imminent, the employee may notify on-site authorities directly as outlined.

General emergencies are reported on the plant telephone system by calling extension 2911. This automatically rings telephones in the following offices:

- Emergency Director (Shift Superintendent);
- Plant Protection Central Dispatch Station;
- Fire Department Dispatch Station; and
- Medical Department.

The caller will give details on the situation. If the incident involves a fire, explosion, or release of hazardous waste, the Fire Department's Hazardous Materials Response Team will go immediately to the scene. The Plant Protection Central Dispatch Station will activate the Building Emergency Response Teams by telephone. The Emergency

Director may activate the Emergency Operation Center (EOC) and notify a number of departments that have an advisory role in the situation. The EOC may activate the Automatic Dialing Access System (ADAS) or ringdown system. The ADAS is a computer-operated call system that notifies key response personnel of an emergency situation during and after working hours. Some of the people on the system include health physicists, environmental specialists, and the plant meteorologist.

The Fire Department will dispatch its fire trucks and the on-site ambulances with trained personnel to the scene if necessary. The Medical Department will prepare the on-site medical facilities to receive any injured personnel.

In the case of a hazardous materials spill, the Fire Department will be able to provide temporary measures to stop and contain a spill. The RCRA/CERCLA manager and the Waste Operations Group are responsible for long-term cleanup of spills at the units undergoing post-closure care and monitoring.

The fire phone system can be used in an emergency situation. Lifting the handset of a fire phone activates the building

alarm bells and automatically notifies both the Fire Department and the Plant Protection Central Station that an emergency situation exists. If the situation allows, the caller will give these departments information on the situation. If there is not enough time for the caller to give details of the incident to these departments, they will respond automatically as discussed above.

Two-way radios are used by personnel in remote locations (example: west spray field, landfill and solar evaporation ponds) to communicate with response personnel. In an emergency, the Plant Protection Central Station can be contacted using a reserved emergency channel. The dispatcher in Plant Protection is then responsible for contacting the Fire Department, the Emergency Director, and the Medical Department. Notification of other departments that have an advisory role is accomplished as previously described.

If additional help from off-site agencies is required, the Emergency Director will instruct the Emergency Operation Center to contact the agencies. A list of agencies and available contractors and their phone numbers is maintained in the Emergency Operation Center.

In case of a cover failure, drainage system blockage or other damage to a remedial alternative operating during the post-closure care period, Rockwell's RCRA/CERCLA manager will be notified immediately. If the RCRA/CERCLA manager determines that the facility has had a release, fire, or explosion which could threaten human health, or the environment, outside the facility then Albert E. Whiteman, DOE Area Manager, will immediately notify either the government official designated as the on-scene coordinator for that geographical area, or the National Response Center [using their 24-hour toll free number (800) 424-8802] in accordance with CCR 264.56(d)(2) and 40 CFR 264.56(d)(2).

The report will include:

- (1) Name and telephone number of reporter;
- (2) Name and address of facility;
- (3) Time and type of incident (e.g., release, fire);
- (4) Name and quantity of material(s) involved, to the extent known;
- (5) The extent of injuries, if any; and
- (6) The possible hazards to human health, or the environment, outside the facility.

Mr. Whiteman will then note in the operating record the time, date, and details of any incident that requires

implementing the contingency plan. Within 15 days after the incident, he will submit a written report on the incident to the Regional Administrator in accordance with CCR 264.56(j) and 40 CFR 264.56(j). Section G of the HRMW RCRA Part B Permit Application includes the report requirements.

Any air release of hazardous or radioactive constituents will be reported orally immediately to the Air Pollution Control Division of the Colorado Department of Health (CDH). A release involving a reportable quantity of a hazardous substance as defined in 40 CFR 302.4 will be reported to the National Response Center immediately. Off-site emergency response contacts are listed in the HRMW RCRA Part B Permit Application.

G-4b Identification of Hazardous Materials

The initial response of the Emergency Director will be to obtain the following information:

- o The character, exact source, amount, location and areal extent of the release;
- o Whether or not the release could move off-site;
- o Spill containment procedures that have been implemented;

- o Whether there are any injuries resulting from the incident.

G-4c Hazard Assessment

The Emergency Director will assess the possible hazards, both direct and indirect, to human health and the environment. This assessment will be based on information obtained during the identification of the material and on the following:

- o The hazardous waste unit from which the released material is emanating and the proximity to surface waters;
- o Weather patterns and wind direction at the time of the spills;
- o The characteristics of the spilled material, including physical characteristics, reactivity, and both human and animal toxicity.

Resources available to the Emergency Director include spill control reference texts, 24-hour meteorological data, and Health, Safety and Environment (HS&E) Department specialists. Key personnel in the Health, Safety, and Environment Department will staff a satellite control center with direct contact to the Emergency Director and the EOC during the response to any release.

Should on-site or off-site evacuation be necessary, the Emergency Director will notify the appropriate personnel, including on-site fire, and security personnel, and regulatory agency contacts (notification procedures are addressed in Section G-4a). Evacuation procedures are delineated in Section G of the HRMW RCRA Part B Permit Application.

G-4d Control Procedures

The following sections address responses to be taken to probable occurrences in accordance with CCR 264.52(a) and 40 CFR 264.52(a). Notification procedures upon discovery of a release are delineated in Section G-4a. Ground-water contaminant migration issues are discussed in Section E.

G-4d(1) Loss of Containment Integrity

Solar Evaporation Ponds

The solar ponds will be regraded and covered with a cap as part of closure. The cap will prevent runoff water from becoming contaminated. The ponds will not have a containment system since existing liners will be removed or left in place and capped. The cap will be maintained and

repaired as needed in accordance with Section F-4a. Therefore, a loss of containment integrity cannot occur.

If installed, the ITW storage tank(s) will be inspected daily for leaks and the potential for leaks. The water in the tank(s) will be from the interceptor trench system (Appendix I-2) and, as evidenced from recent sampling, will contain low concentrations of contaminants.

Should a leak occur, the water will flow into the diversion ditches and be further diluted as it flows into the interceptor ponds. The flow path and remediation of potentially contaminated runoff migration is discussed in Section F-4b under "Site Drainage." Therefore, the effects from a tank spill will be minimal. A contingency plan will be developed once a design for the tank has been approved by CDH and EPA (prior to actual construction) and will be located in Appendix G-1.

Present Landfill

The final configuration of the present landfill, including the design of the cap, the method for containment of the advancing face, and the need for a water treatment system will be determined following completion of ongoing field and

engineering studies. The cap will be maintained and repaired as needed in accordance with Section F-4a. Responses to a loss of containment integrity will be determined subsequent to developing the final configuration of the landfill. Water will be collected and analyzed from the landfill discharge point and from the east pond on a quarterly basis. Should variations in the water quality upon completion of closure be sufficient to require treatment of the ground water, a treatment system will be constructed. A contingency plan will be developed once a design has been approved by CDH and EPA (prior to actual construction), and will be located in Appendix G-2.

West Spray Field

The west spray field is not expected to have a containment system. Therefore, a loss of containment integrity will not occur. If the west spray field is closed with contaminated soil in place, a drainage system will be installed to control runoff at the site. Runoff will then be sampled quarterly after a major storm event. Should the runoff analyses exceed the NPDES Discharge Criterion, the closure of the West Spray Field will be reevaluated.

Original Process Waste Lines

The original process waste lines are not expected to have a containment system. Therefore, a loss of containment integrity will not occur. The original process waste lines will, however, be capped in places in order to prevent contaminated runoff from occurring. The cap will be maintained and repaired as needed in accordance with Section F-4a.

G-4d(2) Severe Storm Erosion

Special visual inspections will be conducted at the solar ponds, present landfill, west spray field and original process waste lines following severe storms. Appropriate maintenance, as discussed in Section F-4, due to severe storm erosion will be provided as need is indicated by the inspections.

Sandbags and haybales will be used as a temporary measure to shore up berms or drainage ditches. Depending on the extent of erosional damage, a cover may need to be restored to its initial design by adding additional soil and/or revegetating it. In the case of drainage ditches, a geosynthetic liner or riprap may be necessary to combat severe storm erosion.

G-4d(3) Drainage Failure

Solar Evaporation Ponds

Drainage and diversion ditches may be present at the solar ponds during the post-closure care period. The drainage system will be inspected on a quarterly basis. Responses to drainage failure will be determined subsequent to approval of design documents for this system by CDH and EPA. If the drainage system becomes blocked, the blockage will be removed in a timely manner. Specific inspection maintenance and contingency actions will be incorporated into this document after approval of design documents by CDH and EPA.

Present Landfill

Modifications to the existing drainage and diversion ditches will be made during closure of the landfill. The drainage systems will be inspected on a quarterly basis for evidence of erosion and blockage. If the surface water drainage system becomes impaired as a result of erosional damage, an evaluation will be made at that time to determine the best solution for the problem. If blockage impairs the effectiveness of the drainage system it will be removed in a timely manner.

If it becomes evident that the riprap channel or the discharge pipe leading from the landfill to the east pond becomes blocked, it will be excavated, the blockage removed and the drainage system redesigned. Specific inspection, maintenance and contingency actions will be incorporated into this document after approval of design documents for the drainage system by CDH and EPA.

West Spray Field

If the west spray field is closed with contaminated soil in place, a drainage and diversion system will be installed at the west spray field during closure. If a drainage system is installed, it will be inspected on a quarterly basis. Responses to drainage failure will be determined subsequent to selecting the characteristics of the drainage and diversion system, if necessary. If the drainage system becomes blocked, the blockage will be removed in a timely manner. Specific inspection, maintenance, and contingency actions will be incorporated into this document after approval of design documents for the drainage system by CDH and EPA.

Original Process Waste Lines

Drainage and diversion ditches may be present at the original process waste lines during the post-closure care period. If a drainage system is installed during closure, it will be inspected on a quarterly basis. Responses to drainage failure will be determined subsequent to selecting the characteristics of the drainage and diversion system, if necessary. If the drainage system becomes blocked, the blockage will be removed in a timely manner. Specific inspection, maintenance, and contingency actions will be incorporated into this document after approval of design documents for the drainage system by CDH and EPA.

G-4d(4) Drought

Drought tolerant native grasses that are adapted to a semi-arid climate will be selected if the cap is revegetated. If drought conditions exist, appropriate maintenance will include reseeding, as necessary.

G-4d(5) Water Supply Protection

Containment will be provided for all liquid waste management units (ex. ITW storage tanks) to prevent contamination of

domestic drinking water supplies resulting from a spill of wastes. The natural drainages on site (Section F-4b) have a series of basins to contain spillage should any of the other containment structures fail. A spill will enter the surface water control ditches on site. Response personnel will attempt to contain a spill in the control ditches, but if this is not possible, the spill will be diverted to the surface water control ponds by control valves. Spills which cannot be contained in the spill control pond will be pumped to other spill control ponds or to containment vessels.

In the case of the landfill, the water collected by the ground-water control systems will be discharged to the existing east pond for storage and evaporation. The east pond will be operated as a zero discharge impoundment to surface drainages for the 100-year, 24-hour storm event after closure.

During closure of the landfill, the dike will be reinforced as needed and the water elevation in the east pond will be lowered to a maximum elevation of about 5,915 feet above sea level. This maximum pool elevation will be maintained during post-closure care resulting in approximately 11 acre-feet of excess storage in the pond. This excess storage

will hold all the runoff from the 100-year design storm. A gauging station will be installed in the east pond and will be monitored on a quarterly basis and after major storm events. Excess pond water will be spray evaporated, pumped to an existing National Pollutant Discharge Elimination System (NPDES) permitted discharge point or discharged under a new NPDES permit for the east pond. Final excess storage volume and water elevations will be determined during final design.

Any releases to the soil or surface water will be controlled and cleaned up as quickly as possible to prevent the spread of contamination that might threaten water supplied.

G-4d(6) Fire and/or Explosion

In the improbable event of a fire or explosion in an area undergoing post-closure care and monitoring, the RCRA Contingency Plan will be activated as outlined in Section G of the HRMW RCRA Part B Permit Application. The Emergency Director will be notified and will be responsible for assessing the situation and advising emergency personnel as to special hazards relating to the event. The Rocky Flats



Plant Fire Department will respond to such emergencies in order to protect human health and the environment.

An "all clear" signal will be given when the fire has been extinguished and the safety of personnel is no longer endangered. The Emergency Director has the authority to initiate the "all clear" signal.

All equipment used in the emergency will be cleaned and ready for use prior to resumption of plant operation in the affected areas.

G-4d(7) Spills and Leakage

The units covered under the Post-Closure Care Permit will be routinely inspected for signs of leaks, spills, deterioration, or damage during post-closure care (see Section F). If there are indications of unit failure or containment system failure that threaten human health or the environment, corrective actions will be implemented by the Emergency Director or RCRA/CERCLA program manager immediately. The plan clearly outlines the steps necessary to evaluate the extent of concern and to determine the measures necessary to respond to the problem.

Upon observing or detecting a spill, facility employees will implement the following procedures:

- o Immediately, contact the RCRA/CERCLA Manager and describe the location, quantity (approximate), extent, and composition (if determined) of the spill;
- o The RCRA/CERCLA Manager will determine whether the incident involves a hazardous waste, If so, the Emergency Director will be contacted immediately by calling X2911;
- o If the Emergency Director determines that a reportable quantity has not been released and there is no fire or injury, he will instruct the RCRA/CERCLA manager to implement the following steps:
 - Specify the extent and nature of the release and dispatch appropriate cleanup equipment;
 - Dispatch an employee to the release site to prepare a report that defines the problem and details the follow-up activities that are necessary.
- o If the amount of material released is a reportable quantity or if there has been a fire, explosion, or injury, the Emergency Director will assume control and implement the following procedures:
 - Go to the scene of the incident;
 - Determine the nature and extent of the release;
 - Order evacuation of the affected area if the incident involved uncontrolled releases of ignitable, corrosive, or reactive materials;
 - Direct the Fire Department personnel to the location of the spill or leak if they are able to safely mitigate the incident;

- Contact the Environmental Analysis and Control and instruct the personnel there to call the National Response Center if the spill is a reportable quantity under CERCLA;
- Monitor the status of the incident and direct the response until an emergency condition no longer exists;
- Instruct the RCRA/CERCLA program manager to begin cleanup operations;
- Once an emergency condition no longer exists and cleanup operations are in progress, instruct the RCRA/CERCLA program manager to establish a committee to prepare a report that defines the problem and details the follow-up activities that are necessary.

Once the incident has been controlled, clean-up and decontamination will begin. Clean-up involves collecting and containing any released material including liquid releases, contaminated sorbent material, and contaminated soil. Liquid releases can be pumped into drums, treated to render the material nonhazardous, or immobilized using sorbent material. Contaminated sorbent material will be contained in U.S. DOT approved containers. Soil in the area of the release that can be determined visually to be contaminated will be removed and contained. The remaining soil in the area will be sampled and analyzed per the Waste Analysis Plan in Section C for the constituents released. Contaminated soil will be removed until subsequent analyses

indicate that the levels of released constituents are similar to background soil levels. Background levels of contaminants in soil will be considered as the concentration(s) of released compounds in soil on the plant site that was not contaminated by the release.

Decontamination involves removing contaminants from equipment and structures such as berms. The usefulness of a particular decontamination technique is influenced by:

- o the nature of the contamination;
- o the nature of the object contaminated - size and shape; roughness/porosity of surface, nature of materials, etc.;
- o ability to handle, treat, or dispose of decontaminated material;
- o local restrictions and conditions.

Although the aim of decontamination is to remove contamination, it is desirable to do so without damaging the item concerned so that it may be re-used. Therefore, the least aggressive effective decontamination method will be employed to avoid surface deterioration.

There are four methods that typically are used for decontamination of materials such as those found at the

site. These are hydroblasting/water wash, foam cleaning, steam cleaning and spalling. These methods are summarized below.

Foam cleaning consists of suspending decontamination agents in a thick, dry foam that is applied onto surfaces to be cleaned. A variety of commercial decontamination agents are used for foam cleaning. Table G-1 lists typical chemicals available.

Porous surfaces such as wood, concrete, or asphalt may be difficult to clean because contamination may penetrate into the material through pores. Spalling is a method of cleaning such objects by removing a thin layer of the material from the surface. Objects may be spalled with a hydroblaster or grinder. Large power grinders are used for cleaning large areas. Smaller units generally are used for small objects and hard-to-clean areas such as corners.

Hydroblasting or steam cleaning can be used with standard cleaning solutions to remove many of the materials used at the plant site. The solutions that can be used and contaminants they remove are listed in Table G-2.

TABLE G-1

TYPICAL FOAM PROCESS CHEMICALS

- (1) sulfonated detergents blended with synthetic wetting agents and coupling agents.
- (2) alkaline detergent cleaning powders
- (3) inhibited liquid phosphoric acid
- (4) a mixture of sodium hydroxide, chelating agents (gluconates) with wetting agents and inhibitors
- (5) a silicon anti-foaming agent emulsified in water
- (6) inhibited acidic powder containing oxalate, citrate and ammonium ions, as well as inhibitors, surfactant and foam suppressant.

TABLE G-2

GENERAL PURPOSE DECONTAMINATION SOLUTIONS

| SOLUTION | PREPARATION DIRECTIONS | CONTAMINANTS |
|----------|---|--|
| 1. A | TO 10 GALLONS OF WATER, ADD 4 POUNDS OF SODIUM CARBONATE AND 4 POUNDS OF TRI-SODIUM PHOSPHATE. STIR UNTIL EVENLY MIXED. | INORGANIC ACIDS, IONIC METALS |
| 2. B | TO 10 GALLONS OF WATER, ADD 8 POUNDS OF CALCIUM HYPOCHLORITE AND 1/2 POUND OF SODIUM HYDROXIDE. STIR WITH WOODEN OR PLASTIC STIRRER UNTIL EVENLY MIXED. | CYANIDES, OTHER INORGANICS THAT ARE NOT ACIDIC |
| 3. C | TO 10 GALLONS OF WATER, ADD 4 POUNDS OF TRI-SODIUM PHOSPHATE. STIR UNTIL EVENLY MIXED. | SOLVENTS, ORGANIC COMPOUNDS |
| 4. C | SAME AS ITEM 3. | |
| 5. D | TO 10 GALLONS OF WATER, ADD 1 PINT OF CONCENTRATED SULFURIC ACID SLOWLY WHILE STIRRING. | CAUSTIC WASTE |
| 6. E | USE A COMPOSITION OF 0.5% EDTA* 0.25M CITRIC ACID, 0.15M N ₂ H ₄ (HYDRAZINE) IN DEIONIZED WATER. | MIXED WASTE (NON-OILY) |
| 7. F | USE FULL STRENGTH PETROLEUM ETHER OR SIMILAR ORGANIC SOLVENT. | ORGANIC COMPOUNDS |
| 8. G | USE WATER | DILUTE ORGANIC AND INORGANIC CONTAMINANTS |

* EDTA IS ETHYLENEDIAMINETETRAACETIC ACID.

The success of a decontamination procedure will be measured by comparing the concentration of appropriate substances in rinsate with "background" concentrations in the rinsate source. In this test, concentrations of parameters representative of the contaminants are measured in the rinsate source and in the rinsate after or during decontamination. The item is judged clean according to this test when the concentration of the parameters in the decontamination rinsate is smaller than the average concentration plus one standard deviation in the rinsate source.

The environmental incident reporting procedures will be followed when a release occurs. A committee is appointed by the Director of HS&E to review each incident that requires implementation of the Contingency/SPCC/BMP Plan. The committee investigates the circumstances surrounding the release and writes a report describing the incident and any corrective measures necessary to prevent a recurrence. A copy of the report is submitted to the Director of Health, Safety and Environment (HS & E) and the RCRA/CERCLA Manager.

G-4d(8) Power or Equipment Failure

A power interruption would not affect waste management facilities at the Rocky Flats Plant because the plant has emergency power generation capabilities. Incidents involving equipment failure would be handled as a fire or release if the failure caused either a fire or release to occur. Otherwise, the equipment would be promptly repaired or replaced.

G-4e Prevention of Recurrence or Spread of Fires, Explosions or Releases

To prevent the further spread of fires or releases during an incident, the Emergency Director will instruct response personnel to move any hazardous material near the release or fire to a safe area. During a fire, if any materials cannot be moved because of danger to response personnel, the materials will be sprayed with an appropriate fire suppressant.

The Emergency Director can also authorize area, building and plant shutdown to ensure that the fires, explosions or releases do not spread to other areas. Process shutdown procedures are maintained in each production building.

Rocky Flats personnel are trained through safety classes and supervisor instructions to handle various emergency incidents. A plant-wide emergency drill is conducted annually in conjunction with the Colorado Highway Patrol and the Colorado Emergency Response Center. Records of these drills are kept at the Rocky Flats Emergency Response Office. Key employees are familiar with the emergency equipment and fire control structures available to prevent the spread of fires in their work area.

To prevent recurrence of an incident, any faulty or defective monitoring equipment, valves, pumps, alarms, or other equipment will be repaired. If repair is not possible, the equipment will be replaced. The facility or unit will not be used until the equipment is fully operational.

Any fires, explosions, or releases that require implementation of the Contingency Plan will be thoroughly reviewed. The Director of HS&E will appoint a committee which will be responsible for:

- o Investigation of the cause of the occurrence or incident;
- o Identification of measures to prevent a recurrence; and

- o Coordination of the implementation of measures to reduce the risk of a recurrence.

If the corrective measures necessitate a change in this plan, it will be updated per the procedures in Section G-8a. Records of any corrective actions relating to the storage, treatment, or disposal of hazardous waste will be maintained in the facility operating record which is kept in the offices of Environmental Analysis and Control.

G-4f Storage and Treatment of Released Hazardous and Radioactive Mixed Wastes

Once cleanup procedures are completed, the Emergency Director will contact the RCRA/CERCLA program manager who will make arrangements for the treatment, storage, or disposal of the hazardous or radioactive mixed wastes resulting from the incident. These wastes will be containerized in DOT approved containers and staged in a secure area prior to treatment or storage. After containment, the RCRA/CERCLA program manager will be responsible for sampling and analysis of the wastes in accordance with the Waste Analysis Plan in Section C of the RCRA Part B permit application to determine how to store, treat and dispose of the material.

Aqueous inorganic wastes may be treated in the process waste system. If the material is ignitable and meets the requirements for incineration, the material may be transported to the on-site fluidized bed incinerators for disposal.

Hazardous and mixed waste container storage facilities located on the plant site will be used if the material cannot be treated on-site. In this case, the RCRA/CERCLA program manager will arrange for transportation and disposal at an approved off-site facility.

G-4g Incompatible Waste

Incompatible materials at the site are segregated. Should storage of spill cleanup material be required, the RCRA/CERCLA program manager will direct operating personnel to maintain physical segregation of incompatible wastes and proper marking of such stored material.

G-4h Post-Emergency Equipment Maintenance

All contaminated materials from a release of hazardous waste or materials, including respirators, boots and protective

clothing will be decontaminated or managed as hazardous or radioactive mixed wastes. The decontamination solution and any contaminated material will be stored, treated or disposed of as designated by the Hazardous Waste Coordinator.

All emergency equipment used or located in the area of the incident will be cleaned and repaired so that it is fit for reuse. If the equipment cannot be repaired, it will be replaced. Before operations are resumed, an inspection of all safety equipment will be conducted by Plant Fire Department personnel. Fire Department personnel currently perform regularly scheduled inspections of all safety equipment. The frequencies and equipment to be inspected are detailed in Section F.

Notification that post-emergency maintenance has been performed and that operations will be resumed will be provided to the Director of HS&E by Environmental Analysis and Control. The HS&E Director will notify the Colorado Department of Health prior to resuming operations.

G-4i Tank Spills

Tank spills from the ITW storage tanks that are associated with the solar evaporation ponds are addressed in Section G-4d(1).

G-4j Landfill Leakage

The present landfill is not lined and does not have a leak detection system.

A leachate collection system was installed around the perimeter of the landfill in 1974 as part of the landfill expansion. The collection system was designed to collect any leachate generated by the landfill. To date, no leachate has been collected in the system (Illsley, 1986). The existing leachate collection system is discussed in the present landfill Closure Plan presented in Appendix I-2. Because there are impacts to ground-water quality at the site, because of relatively high water levels within the landfill, and since closure activities may result in changes in the quality of water beneath the landfill, a ground-water collection system is proposed for closure.

The ground-water collection system will be constructed at the downstream toe of the final landfill cover (Appendix I-2). The collection system will be a gravel drain excavated through the surface colluvial and alluvial material into the underlying claystone bedrock. The drain will lower water levels within the landfill and collect potentially impacted ground-water flows within the surface soils and shallow bedrock. Collected water will be pumped to the east pond area for storage and evaporation. Should variations in the water quality from the landfill be sufficient to require treatment of the east pond waters, a treatment system will be constructed to handle contaminated waters at the plant site.

SECTION H
PERSONNEL TRAINING

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Section H

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Appendix H-2 - RCRA Training Course Material

SECTION H
PERSONNEL TRAINING

H-1 INTRODUCTION [CCR 100.41; 40 CFR 270.14(b)(12);
29 CFR Part 1910]

The Occupational Safety and Health Administration (OSHA) proposed on August 19, 1987, to amend the OSHA standards for hazardous waste operations and emergency response in 29 CFR 1910.120. OSHA has proposed a permanent final standard to replace the interim final rule (published December 19, 1988) as required by Congress in the Superfund Amendments and Reauthorization Act of 1986 (SARA).

Employees involved in operations covered by the Comprehensive Environmental Response, Compensation and Liability Act of 1980 (CERCLA) and certain hazardous waste operations conducted under the Resource Conservation and Recovery Act of 1976 (RCRA), and in any emergency response to incidents involving hazardous substances are covered by this proposed rule.

The issuance of this proposed rule was mandated by section 126(b) of SARA. The proposed rule regulates employee safety

and health at hazardous waste operations and during emergency response to hazardous substance incidents.

This section presents the training program which is implemented at the Rocky Flats Plant (RFP) to ensure that all employees perform their work in full compliance with Colorado Hazardous Waste Regulations (CHWR) 100.41(a)(12) and 40 CFR 264.16. These regulations prescribe the requirements for personnel training at facilities which generate, treat, store and dispose (TSD) of hazardous materials.

In addition, the RFP includes in their training program a basic series of RCRA courses and related course work. These include ongoing technical, safety and contingency plan training programs.

The RCRA training program is directed and approved by the Directors of Health, Safety and Environment (HS & E) and Plutonium Operations. The responsibility for developing and implementing the RCRA training and certification program has been delegated to the RCRA Training Officer.

H-2 INITIAL RCRA TRAINING [CCR 264.16(b), 264.16(d)(4);
40 CFR 264.16(b), 264.16(d)(4), 29 CFR Part 1910]

The proposed OSHA rule includes specific provisions for initial and routine training of employees before they would be permitted to engage in hazardous waste operations that could expose them to safety and health hazards. Section 162(b)(2) of SARA requires initial and routine training to be included in the proposal. The intent of the proposed training provisions is to provide employees with the knowledge and skills necessary to perform hazardous waste cleanup operations with minimal risk to their safety and health. Table H-1 lists the Rockwell sponsored SARA/ OSHA hazardous waste training which is required for employees engaged in hazardous waste operations.

The proposed OSHA provisions include a minimum of 40 hours of initial instruction off the site, and a minimum of three days of actual field experience under the direct supervision of a trained and experienced supervisor, at the time of job assignment. Congress has specifically imposed these hour and day requirements under section 162(d) of SARA for the proposed final standard. The proposed requirement is a one-time effort by the employer for each employee covered by this standard.

TABLE H-1

SARA/OSHA TRAINING FOR ROCKWELL EMPLOYEES

The employees in the following job classifications will receive the required SARA/OSHA Hazardous Waste Training.

| Job Description | Required Training |
|---|---|
| Hazardous Material Response Team (Fire Department) | 40 hrs classroom** 24 hrs on site +8 hrs (supervision) +Monthly Update |
| Waste Technicians (Waste Operations) | 40 hrs classroom 24 hrs on site +8 hrs (supervision) |
| Hazardous Waste Custodians/ Process Area Supervision | Hazard Recognition |
| Security Guards | Hazard Recognition |
| Analytical Laboratory CERCLA Support Personnel | 40 hrs classroom 24 hrs on site +8 hrs (supervision) |
| Shift Superintendents | 40 hrs classroom 24 hrs on site +8 hrs (supervision) |

Note: There may be additional support personnel identified as part of an on-site emergency response team required to receive this training.

** Currently enrolled in Colorado Safety Institute training course which will be a Certified Course.

In accordance with Section 162(d)(2) of SARA, managers and supervisors at Rocky Flats who are directly responsible for hazardous waste site operations are required to take the same training as that of employees in addition to at least eight additional hours of specialized training on managing hazardous waste operations. Since these managers and supervisors are responsible for directing others, it is necessary to enhance their ability to provide guidance and to make informed decisions.

In addition to the training, the proposed OSHA rule also includes specific provisions for baseline, periodic and termination medical examinations. Section 162(b)(3) of SARA provides that the proposal include requirements for medical examinations of workers engaged in hazardous waste operations. Rockwell provides in accordance with 49 CFR Part 1910 a comprehensive medical surveillance program for employees engaged in hazardous waste operations where it is medically prudent.

In all areas of training, whether it be for general site employees, supervisors at the site, or for the use of specific equipment, the level of training provided is consistent with the worker's job function and

responsibilities. For example, the Fire Department has established a three-tiered training program for all HAZ-MAT Response personnel (Appendix H-1). Refresher training is supplied annually to reemphasize the initial training and to update employees on any new policies or procedures.

Table H-2 provides a summary of job descriptions for key RCRA positions for exempt (professional) personnel. A complete description for all RCRA related positions for non-exempt personnel is presented in Table H-3. Educational requirements and other course work requirements are summarized in Table H-4.

Additional safety training conducted by Rockwell includes the following eleven related courses:

- o Radiation Safety Training/Respirator Fitting and Use (RAD Safety)
- o Nuclear Safety Training (NUC Safety)
- o Beryllium Safety Training (Be Safety)
- o Fire Response Training (Fire Training)
- o DOT Hazardous Material Training (DOT)
- o Radioactive Waste Certification Training (RAD Waste)
- o OSHA Hazards Communication (Right to Know) Training (RTK)

TABLE H-2

RCRA JOB DESCRIPTIONS FOR EXEMPT RFP PERSONNEL

| <u>POSITION</u> | <u>DESCRIPTION</u> |
|--|--|
| Health, Safety & Environment Director | Responsible for planning and implementing, within the contractual and corporate requirements, the on-site portion of the health, safety, and environment program to ensure that employees are provided with a safe and healthful work place and to ensure that the environment is protected from adverse effects as a result of plant operations. the high visibility of safety at Rocky Flats in the community requires the conduct of these activities to be effective, visible, and auditable. The HS&E organizations report to the deputy for direction and guidance including Medical, Radiation Safety, Nuclear Safety, Operations Management, and Application Technology. |
| Solid Waste Treatment (Non PSZ) Manager | Responsible for the management of an organization consisting of three major functional operations: a) volume reduction of waste generated in the non-plutonium plant operations, b) waste shipping activities and implementation of the new DOE Trupact System and c) dispensing of all waste packaging materials. |
| Emergency Preparedness and Security Assurance (EP&SA) Manager | Assures that Rocky Flats has an effective and comprehensive emergency preparedness program. In addition, the function establishes policy and guidelines applicable to all plant employees concerning human reliability, analysis of insider threats and vulnerability assessment of plant facilities. |

TABLE H-2

RCRA JOB DESCRIPTIONS FOR EXEMPT RFP PERSONNEL

| <u>POSITION</u> | <u>DESCRIPTION</u> |
|-----------------------------|---|
| Senior EP&SA Coordinator | <p>This position encompasses two major functions within the Plant Security Department:</p> <ul style="list-style-type: none">A. Administration of the Plant emergency preparedness program,B. Administration of the off-site Rockwell International subcontractor security programs. <p>The emergency preparedness function requires the preparation, coordination, and maintenance of emergency response plans for the Plant; assisting top management in the formulation of emergency response policies; ensuring adequate training of employees and emergency response groups through exercises, training programs and other media. Coordinating emergency response capabilities and equipment both on site and with surrounding communities; provide liaison with federal and state emergency response agencies, and ensuring compliance with all DOE emergency preparedness requirements.</p> |
| Fire Department Manager | <p>Responsible for the effective, overall management of the Fire Department. Responsible for the development, implementation and maintenance of policies and procedures to assure effective operation of the Fire with respect to fire protection, life safety and fire protection, life safety and fire prevention. Ensures that the requirements of Rockwell, DOE, NFPA and other associated directives are supported.</p> |

TABLE H-2

RCRA JOB DESCRIPTIONS FOR EXEMPT RFP PERSONNEL

| <u>POSITION</u> | <u>DESCRIPTION</u> |
|-----------------------------|--|
| Fire Information Officer | Responsible for the development, instruction and implementation of a comprehensive Fire Department training program. The officer will coordinate training schedules for Fire Department personnel, building fire brigade members, security guard force and all Plant employees, with special emphasis on organizations with specialized needs. |
| Fire Safety Specialist | Provides the Rocky Flats Plant with fire/emergency medical and hazardous material response for all properties and personnel within the confines of the Plant. Responsible for testing of automatic detection systems, suppression systems, manual fire alarm, and plant fire water distribution systems. Must also be in excellent health with no restrictions. Provides training for lower level fire safety specialists. |
| Hazardous Waste Coordinator | The position serves as the coordinator of the hazardous and mixed waste program at Rocky Flats. In addition to DOE requirements for radioactive wastes, the management of all wastes at Rocky Flats must meet the regulated requirements specified under RCRA, TSCA, CERCLA, and the CHWL. The objective of this position is to assure compliance with the regulatory requirements created under these laws. |

TABLE H-2

RCRA JOB DESCRIPTIONS FOR EXEMPT RFP PERSONNEL

| <u>POSITION</u> | <u>DESCRIPTION</u> |
|---|--|
| Waste Operations Engineer | Provides technical expertise to several areas of Waste Operations. Oversees development work affecting waste packaging and/or processes. Insures the effectiveness of department policies in the work areas by reviewing EJO's, work orders, procedures, OSA's and other pertinent technical literature. |
| Waste Operations Manager | Responsible for a comprehensive radioactive and hazardous waste management program at the Rocky Flats Plant; operation of all waste treatment and processing facilities to minimize generation of radioactive, hazardous and mixed wastes requiring off-site disposal; provision for systematic collection, processing, packaging and shipping of certified waste products; assurance of conformity to all policies, procedures, specifications and regulations involving radioactive and hazardous wastes, including those mandated by DOE, DPA, CDH, WIPP-WAC, INEL, NTS and Rockwell International. |
| Health, Safety & Environment Operations Manager | Insures proper plant health, safety and environmental posture by acting as the primary liaison between the Director of HS&E and his direct report organizations. This includes the day-to-day management of routine operational matters, budgetary conformance, technical matters, long-range strategic planning, and operational implementation of HS&E policies, standards and procedures. Additionally, the manager works to strengthen HS&E's long-range response to the areas of environmental compliance, industrial hygiene, and other special projects. |

TABLE H-2

RCRA JOB DESCRIPTIONS FOR EXEMPT RFP PERSONNEL

| <u>POSITION</u> | <u>DESCRIPTION</u> |
|--|---|
| Waste Water Projects Manager | Provides managerial and administrative direction for a special projects team of operating personnel and engineers, management and operations of the plant wide process waste collection system, and process and support equipment management for Liquid Waste Operations. |
| Industrial Hygiene Program Administrator | Defines, plans, controls and organizes the Industrial Hygiene Program for HS&E. Activities include: development of audit programs to assure compliance with DOE-prescribed and other applicable standards; preparation of a hazardous chemical indexing system summarizing OSHA-required safety information; and other special projects addressing specific safety needs on plant site (e.g., beryllium study and report). Responsible for keeping current and knowledgeable on federal, state and other applicable compliance requirements and reporting/advising other organizations on plant site of said requirements. Assists other HS&E operations in achieving and maintaining compliance with applicable standards. |
| RCRA Training Officer | Supervises training of all personnel involved in hazardous waste management. Responsible for ensuring that training content meets regulatory requirements and that records of training sessions are properly maintained. |

TABLE H-2

RCRA JOB DESCRIPTIONS FOR EXEMPT RFP PERSONNEL

| <u>POSITION</u> | <u>DESCRIPTION</u> |
|-------------------------|--|
| Shift Superintendent | Provides top management control and maintains responsibility for effective operation of the plant on off-shifts, weekends and holidays. Coordinates plant operations in the absence of the General Manager or senior operational management. Centralizes decision making as necessary. Provides effective response in emergency situations as emergency director at all times. |

TABLE H-3

RCRA JOB DESCRIPTIONS FOR NON-EXEMPT RFP PERSONNEL

| <u>POSITION</u> | <u>DESCRIPTION</u> |
|------------------------|--|
| Waste Technician | Decontaminate material and equipment; reduce the size of waste boxes and radiation level by disassembling, cutting, scrapping, reboxing; package and inspect waste containers for truck and train shipment. |
| Dispatcher | This job consists of receiving calls for trucking service, heavy equipment operations, and labor needs by the plant personnel. Schedules and dispatches vehicles to maintain an efficient operation. Maintains records and logs of the departmental functions and personnel. |
| Filter Test Technician | Test and certify respiratory equipment and HEPA filter according to established Military, ANSI, Government/Industry committee, DOE and Rockwell. |
| Laborer | Assist all departments requiring manual labor; maintain roads, fences, walkways, parking areas; landscape plant site. |
| Radiation Monitor | This job consists of using the various detection instruments to measure radiation, contamination, impurities in air, gases, air flows, vacuum, noise, light, etc. then records readings. The measurements are used to control exposure to radiation, spread of contamination, and various aspects of industrial hygiene. |

TABLE H-3

RCRA JOB DESCRIPTIONS FOR NON-EXEMPT RFP PERSONNEL

| <u>POSITION</u> | <u>DESCRIPTION</u> |
|--|---|
| Analytical Laboratory Technician | Operates a variety of instruments and apparatus in the chemical, spectrometric, and radiochemical laboratories to make physical and chemical tests to determine the quantitative and/or qualitative composition of the following: in-coming materials, in-process materials, products, research and development materials, and various other materials. |
| Bio-Assay Technician | Operation of the various laboratory equipment and instruments used in the chemical and radiochemical analysis of trace materials in biological, autopsy, and environmental samples. |

TABLE H-4

SUMMARY TRAINING REQUIREMENTS

| Job Title | Education & Experience Required | RCRA | Safety | Safety | Training | DOT | Waste | RTK | Security | Security | Bldg. | FIT | Safety |
|---|--|------|--------|--------|----------|-----|-------|-----|----------|----------|-------|-----|--------|
| Emergency Preparedness Security Assurance (EP&SA) Manager | B.S. plus 14 yrs experience or M.S. plus 12 yrs experience or Ph.D. plus 10 yrs experience | A(1) | B | N | O | N | N | I | I | B | I | A | A |
| EP&SA Coordinator | B.S. plus 14 yrs experience or M.S. plus 12 yrs experience or Ph.D. plus 10 yrs experience | A(1) | B | B | O | N | N | I | I | B | O | A | A |
| Waste Water Projects | B.S. plus 1-3 yrs experience or M.S. plus 7-9 yrs experience or Ph.D. plus 4-6 yrs experience | A(2) | B | N | N | B | B | I | I | B | I | A | A |
| Fire Department Manager | B.S. plus 12-14 yrs experience or M.S. plus 11-12 yrs experience or Ph.D. plus 8-10 yrs experience | A(1) | N | N | O | N | N | I | I | B | I | N | A |
| Fire Information Officer | B.S. plus 2 yrs experience or M.S. plus 0 yrs experience | A(1) | B | N | O | N | N | I | I | B | I | A | A |
| Fire Safety Specialist | HS graduate plus 2 yrs votech and 3-6 yrs experience | A(1) | B | B | O* | N | N | I | O | B | I | A | A |
| Hazardous Waste Coordinator | B.S. plus 14 yrs experience M.S. plus 12 yrs experience Ph.D. plus 10 yrs experience | A(2) | B | B | N | B | B | I | I | B | I | A | A |
| Decontamination Worker | 8th grade | A(3) | B | X | N | N | B | I | I | B | I | A | A |
| Health, Safety & Environment (HS&E) Director | B.S. plus 14 yrs experience M.S. plus 12 yrs experience Ph.D. plus 10 yrs experience | A(1) | N | N | N | N | N | I | I | B | I | A | A |

O* = 2000 on-the-job training annually;
3 months fire academy training for new employees.

TABLE H-4

SUMMARY TRAINING REQUIREMENTS

| Job Title | Education & Experience Required | RCRA | Safety | Safety | Training | DOT | Waste | RTK | Security | Safety | Bldg. | FIT | Safety |
|---------------------------------------|--|------|--------|--------|----------|-----|-------|-----|----------|--------|-------|-----|--------|
| Dispatcher | HS graduate plus ability to type plus 2 yrs experience as dispatcher or 3 yrs as a vehicle driver involving use of forms, reports & logs | A(2) | B | B | O | B | N | I | O | B | I | A | A |
| Laborer | 8th grade | A(3) | N | N | N | N | N | I | I | B | I | X | N |
| Manager, Decontamination and Shipping | B.S. plus 8-10 yrs experience M.S. plus 7-9 yrs experience Ph.D. plus 4-6 yrs experience | A(2) | B | B | N | B | B | I | I | B | I | A | A |
| Manager, Garage Trucking and Labor | B.S. plus 8-10 yrs experience M.S. plus 7-9 yrs experience Ph.D. plus 4-6 yrs experience | A(2) | B | B | N | B | N | I | I | B | I | A | A |
| HS&E Operations Manager | B.S. plus 17 yrs experience M.S. plus 15 yrs experience Ph.D. plus 13 yrs experience | A(1) | B | N | N | N | N | I | I | B | I | A | A |
| Shift Superintendent | B.S. plus 14 yrs experience M.S. plus 12 yrs experience Ph.D. plus 10 yrs experience | A(2) | B | B | N | B | N | I | I | B | O | A | A |
| Radiation Monitor | HS graduate with 1 yr of HS math, 1 yr of HS chemistry, physics or biology or equivalent plus 3 yrs on-the-job training in the radiation monitor progression program | A(1) | B | X | N | N | N | I | I | B | I | A | A |

TABLE H-4

SUMMARY TRAINING REQUIREMENTS

| Job Title | Education & Experience Required | RCRA | Safety | Safety | Training | DOT | Waste | RTK | Security | Safety | Bldg. | FIT | Safety |
|--|---|------|--------|--------|----------|-----|-------|-----|----------|--------|-------|-----|--------|
| Senior EP&SA Coordinator | B.S. plus 14 yrs experience M.S. plus 12 yrs experience Ph.D. plus 10 yrs experience | A(2) | B | B | O | N | N | I | I | B | O | A | A |
| Waste Operations Manager | B.S. plus 5-7 yrs experience M.S. plus 4-6 yrs experience Ph.D. plus 1-3 yrs experience | A(1) | B | N | N | B | B | I | I | B | I | A | A |
| Air Filter Technician | 8th grade | A(2) | B | X | N | N | B | I | I | B | I | A | A |
| Analytical Lab Technician | HS grad., plus HS algebra & chemistry or physics | A(2) | B | X | N | N | B | I | I | B | I | A | A |
| Industrial Hygiene Program Administrator | B.S. plus 14 yrs experience M.S. plus 12 yrs experience Ph.D. plus 10 yrs experience | A(1) | B | B | N | N | N | I | I | B | I | A | A |
| RCRA Training Officer | B.S. or equivalent | A(1) | B | N | N | N | B | N | N | N | I | A | A |

Table of Symbols

O - Ongoing

N - Not Required

A - Required Annually

B - Required Biennially

X - Required Based Upon Need and Building Location

Y - Required Frequency Determined for Specific Course

I - Indoctrination Only, Retraining for New Job/Locations

- o Security and Safeguards Courses for the Guards (Security)
- o Industrial Safety Training (Ind. Safety)
- o Building Indoctrination (Building)
- o Respirator Training (Resp. Fit)

The content of the related courses include material required for RCRA training.

RCRA training consists primarily of a RCRA Computer-Aided-Instruction (CAI) course and On-The-Job training. The RCRA CAI course was completed September 1987 and is presently being used. The primary goal of the RCRA CAI course is to train and/or retrain employees on the policies and procedures necessary to protect human health and the environment, and to ensure personal safety through proper management of hazardous wastes. It is designed for all Rockwell Employees (including management) who are impacted by RCRA requirements in their daily activities.

The RCRA CAI course consists of approximately one hour of instruction, embedded questions, and a mastery test. The trainee has the option to go through a course review and practice test. Trainees are required to pass these written

exams with an 80 percent proficiency level to demonstrate a working knowledge of RCRA.

The Computer-Aided-Instruction approach was identified as one of the best ways for Rocky Flats to comply with the RCRA training requirements. Advantages of the RCRA CAI program are: all employees are guaranteed consistent training, convenient locations throughout plant site can be provided for delivery of information, the program can easily be updated, and it is an effective presentation device for such a large target group of people.

The On-The-Job training is conducted by the line supervisor or foreman following the CAI program. All employees who handle hazardous waste and their immediate supervisors are required to complete both on-the-job training and classroom instruction.

On-the-job training is conducted by the employee's supervisor in the work area and takes a minimum of one hour to complete. This portion of training instructs employees in the management of the hazardous waste and emergency response aspects that pertain to their specific area of responsibility. Personnel who are extensively involved in

hazardous waste management spend much longer in on-the-job training. An on-the-job checklist is used for this training. This checklist specifically addresses the management of satellite collection and 90-day accumulation areas, permitted units, and emergency response for the employee's work area. A copy of this checklist is shown in Figure H-1.

Once the employee and supervisor have completed the on-the-job training and signed the checklist, it is sent to Training Administration and Assessment (TA&A). TA&A maintains all employee training records.

H-2a RCRA Training Officer

The RCRA Training Officer is responsible for the development and implementation of the RCRA training and certification program. He establishes qualifications policy, approves qualification requirements, course curricula, instructors, and outside courses. The RCRA training officer ensures that the site inspectors, sampling personnel and manual laborers involved with the post-closure care units have had their 40-hour training and are being medically monitored in addition to having the proper training for their job requirements.

FIGURE H-1
RCRA HAZARDOUS WASTE TRAINING

CHECKLIST

COURSE NUMBER 18-442

Name: _____ Empl No: _____ Dept: _____ Bldg: _____

Instructions for use:

The employee and supervisor are to go over this checklist together. The supervisor will instruct the employee on each point applicable to his/her work area. After completion of the point of instruction, the "Completed" column is checked. "Not Applicable" is checked if the point does not apply to the employee's work area. The completed checklist is to be signed and dated by both the employee and the supervisor and returned by the supervisor to R.F. Weston Co., T-690-L West, within 5 working days. If you have any questions, please call extension 4293.

| | <u>Completed</u> | <u>Not Applicable</u> |
|---|------------------|---------------------------|
| 1. Emergency response and spill control: | | |
| 1.1 Instructions given for emergency response on calling 2911, other appropriate alarm signals, and notification procedure for alerting area supervision. | _____ | _____ |
| 1.2 Review requirement to follow instructions given by HS&E for protective clothing, spill containment and handling, incident reporting and evacuation, if necessary. | _____ | _____ |
| 1.3 Review instructions in operating procedures for emergency releases or spills. | _____ | _____ |
| 1.4 Review instructions in operating and building procedures for emergency shutdown, fires and explosions. | _____ | _____ |
| 1.5 Instructions given on procedures to be followed in the event of a power failure. | _____ | _____ |
| 1.6 Any spill or release of hazardous materials of one pound or one pint or more outside a building must be reported to supervision immediately. | _____ | _____ |

FIGURE H-1

2. Hazardous and mixed waste source control:

2.1 No liquid hazardous wastes are to be introduced into either sanitary or process waste drains. Liquid hazardous wastes include:

2.1.1 Used oils

2.1.2 Spent solvents

2.1.3 Spent acids, bases or other corrosive chemicals

2.1.4 Paints or paint thinners

2.1.5 Used photographic fixer

2.1.6 Other metal-bearing liquid wastes

2.2 No solid hazardous wastes are to be disposed in trash cans or dumpsters going to the sanitary landfill. This includes:

2.2.1 Oil and solvent-filled rags

2.2.2 Surplus or off-spec chemicals

2.2.3 Gas cylinders

2.2.4 Dried paint, paint sludge, paint filters

2.2.5 Beryllium, lead, and silver dust, powder, or scrap

2.2.6 Lead-acid batteries

2.3 All hazardous wastes are to be segregated and collected in drums or other storage containers.

2.3.1 These containers are under the control of a Hazardous Waste Officer, who has the key to the locked collection containers.

2.3.2 The Hazardous Waste Officer and the location of each container is to be identified to the employee.

FIGURE H-1

2.3.3 There are log sheets, labeling, forms, and inspections which are part of the management of hazardous waste.

2.3.3.1 Log forms to show accumulation dates (if required).

2.3.3.2 Hazardous waste labels on containers.

2.3.3.3 Waste Processing Request Form for waste transfer.

2.3.3.4 Inspection records.

2.3.3.5 The location and use of each of these forms are to be explained.

2.3.4 The controlled collection areas are marked with signs and lines painted on floors. These areas are to be kept clear of any material or equipment other than for hazardous waste collection.

2.4 All permitted treatment facilities have been identified and will be inspected.

2.4.1 The location and inspection procedure for each treatment facility is to be explained to the employee, as well as actions to be taken when problems are identified.

3.0 Other:

3.1 The law requires that hazardous wastes be minimized and the toxicity of these wastes be reduced, if possible.

3.1.1 Review with the employee any waste minimization procedures in effect in your area.

FIGURE H-1

3.2 List, by title and number, operating procedures for your area which were used in this on-the-job training (check-list):

1.

2.

3.

4.

5.

3.3 Employee has been informed and understands that Rocky Flats raw materials and products may present a hazard to personal safety and proper material handling procedures and personal safety rules must be observed at all times.

3.4 Characteristics of materials and wastes the employee will encounter on the job have been explained.

3.5 Any employee involved with the transportation on site of hazardous wastes is to follow the procedures called out in the On-Site Transportation of Radioactive and Other Hazardous Materials Manual and is required to complete the DOT Hazardous Materials training course.

3.6 Any other topics specific to your area which apply to hazardous waste management. Please specify which topics were reviewed.

Supervisor Date

Employee Date

The RCRA training officer is also in charge of the site specific health and safety plans which are necessary to help protect the employees health and safety. Rockwell's health and safety plans address the anticipated health and safety hazards of each work operation or activity, and the means to eliminate the hazards or to effectively control them to prevent injury or illness. The ongoing site investigations at the landfill, west spray field, and original process waste lines are providing updated information for the health and safety plans on risks the workers involved in the remediation of the units will be facing.

The Human Resources Department is responsible for course development and revision. The RCRA training is tailored to the employees' level of involvement with RCRA materials. On-the-job training (OJT) is tailored to each employees' actual job responsibilities. The implementation of OJT is the responsibility of the supervisors most familiar with RFP's procedures; however, all training remains the ultimate responsibility of the RCRA Training Officer as delegated by the Directors of HS&E, Plutonium Operations and Human Resources. In addition, the RCRA Training and Observation Committee provides the management necessary to assure the

effective implementation and maintenance of RCRA training activities.

H-2b Minimum Training Requirements

The RFP training program currently being implemented meets or exceeds the minimum training requirements as described in 40 CFR 264.16(a)(3). Section H-2 summarizes the basic course content for the three Module RCRA training program. In addition, Section H-2 lists the related courses which are a part of the basic RCRA training requirements for selected RFP personnel. Table H-4 discusses the frequency with which this training is required.

All RCRA trainers must be approved by the RCRA Training Officer. Classroom training consists of lectures by HS&E staff, other RFP management personnel or outside consultants. Classroom presentations may be supplemented with audio-visual programs. OJT is tailored to the specific tasks of each employee.

H-2c RCRA Training Schedule

It is the responsibility of the RCRA Training Officer to ensure that all personnel with RCRA responsibilities are trained within six months of their effective date in a position and are annually updated. The employees that are engaged in hazardous waste operations receive eight hours of refresher training per year on health hazards and the use of their personal protective equipment.

Employees who do not test satisfactorily are retrained until they are certified. New and reassigned staff will not work in unsupervised positions until they have successfully completed the initial training program.

H-2d Annual Review of RCRA Training

All RCRA training as presented in the RCRA CAI Program is subject to annual recertification. Table H-3 presents the training requirements for all personnel with RCRA responsibilities for the basic RCRA course work and related courses. Annual training is mandatory and personnel with RCRA responsibilities may not work in unsupervised positions until they have been successfully recertified. Annual

testing is subject to the purview of the RCRA Training Officer.

H-2e Training Documentation

40 CFR 264.16(d) requires that records be maintained for each employee with RCRA duties as defined by that person's specific job description. Summary job descriptions for all personnel with RCRA responsibilities are contained in Tables H-2 and H-3. As much as possible, generic job descriptions are used in establishing the initial and continuing training requirements. Although training is scheduled on the basis of generic job descriptions, employee notification for training sessions is conducted by employee name, number, department and building. Attendance is verified using the attendance sheet presented as Table H-5. Employees unable to attend the scheduled session are rescheduled for the next training opportunity. Make-up sessions are scheduled as necessary to ensure that training is completed in a timely fashion.

TA&A maintains a computerized list of all employees requiring RCRA training. This list includes a personalized training history for each employee which includes job title,

TRAINING ATTENDANCE ROSTER

| |
|-----------------------|
| COURSE NUMBER |
| COURSE TITLE |
| START DATE |
| COMPLETION DATE |
| STANDARD COURSE HOURS |

| |
|--------------------------------|
| NUMBER OF SESSIONS |
| HOURS PER SESSION |
| CLASS TIME FROM _____ TO _____ |
| COORDINATOR _____ |
| INSTRUCTOR _____ |
| ORG. _____ |

| 1st Init. | | Mid. Init. | | LAST NAME (Please Print) | EMPLOYEE NUMBER Six Digits | DEPARTMENT | TOTAL HRS ATT | MARK "P" FOR PRESENCE DURING FULL CLASS PERIOD MARK ACTUAL HRS FOR TIME PRESENT LESS THAN FULL PERIOD MONTH & CLASS DATES | | | | | | | | | | | | GRADE | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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training schedule, course attendance and test results. The master list is continually updated to reflect the current employee roster.

TA&A maintains training records for all current employees and subcontractors until closure. Training records are archived by the Training Administration and Assessment Group of the Organization Development Department. Records are maintained for former employees for three years.

SECTION I

CLOSURE PLANS, POST-CLOSURE PLAN AND FINANCIAL REQUIREMENTS

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SECTION I

CLOSURE PLANS, POST-CLOSURE PLAN AND FINANCIAL REQUIREMENTS

I-1 CLOSURE PLANS INFORMATION

A detailed description of closure performance standards, final closure activities, maximum waste inventory, closure schedule, justifications for extensions of closure time and inventory disposal, removal or decontamination of equipment are located in the closure plans in Appendix I. An Exposure Information Report for the solar evaporation ponds, present landfill and west spray field is located in Appendix I-1.

Table I-1 contains the locations in each closure plan where information addressing the regulatory requirements can be located. Most of the units will be closed clean with no requirements can be located. Most of the units will be closed clean with no requirements for post-closure care. Post-closure care is anticipated for the present landfill, the solar evaporation ponds, west spray field and the original process waste lines. There will be no partial closure activities taking place at any of the above hazardous waste units.

TABLE I-1

CLOSURE PLAN SUMMARY

| Hazardous Waste Unit | Location of Closure Plan | Closure Performance Standard | Final Closure Activities | Maximum Waste Inventory | Schedule for Closure | Justification for Extension of Schedule | Inventory Disposal, Removal or Decontamination of Equipment |
|---|--------------------------|------------------------------|--------------------------|-----------------------------|------------------------------|---|---|
| 1) Solar Evaporation Ponds | Appendix I-2 | Section 1.5.1, Appendix I-2 | Appendix I-2 | Section 1.3, Appendix I-2 | Section 1.5.3, Appendix I-2 | Section 1.5.4, Appendix I-2 | Section 2.0 & 3.0, Appendix I-2 |
| 2) Landfill | Appendix I-3 | Section 2.7.1, Appendix I-3 | Appendix I-3 | Section 2.5, Appendix I-3 | Section 2.7.3, Appendix I-3 | Section 2.7.4, Appendix I-3 | Section 3.0, Appendix I-3 |
| 3) West Spray Field | Appendix I-4 | Section 1.6.1, Appendix I-4 | Appendix I-4 | Section 1.4, Appendix I-4 | Section 1.6.3, Appendix I-4 | Section 1.6.4, Appendix I-4 | Section 2.0, 4.0, 5.0, Appendix I-4 |
| 4) Original Process Waste Lines | Appendix I-5 | Section 1.5.1, Appendix I-5 | Appendix I-5 | Section 1.3, Appendix I-5 | Section 1.5.3, Appendix I-5 | Section 1.5.4, Appendix I-5 | Sections 2.0, 3.0, 5.0, and 6.0, Appendix I-5 |
| 5) Container Storage Facilities | Appendix I-6 | Section 1.14.1, Appendix I-6 | Appendix I-6 | Section 1.12, Appendix I-6 | Section 1.14.3, Appendix I-6 | Section 1.14.4, Appendix I-6 | Sections 2.0 to 4.0, Appendix I-6 |
| 6) Building 443 No. 4 Fuel Oil Tank | Appendix I-7 | Section 1.5.1, Appendix I-7 | Appendix I-7 | Section 1.3, Appendix I-7 | Section 1.5.3, Appendix I-7 | Section 1.5.4, Appendix I-7 | Sections 2.0 to 4.0, Appendix I-7 |
| 7) Hazardous Waste Storage Area, SMU No. 203 | Appendix I-8 | Section 1.2, Appendix I-8 | Appendix I-8 | Section 1.3.4, Appendix I-8 | Section 1.4.2, Appendix I-8 | Section 1.4.3, Appendix I-8 | Sections 1.4.1, 2.0, and 3.0, Appendix I-8 |
| 8) Original Uranium Chip Roaster | Appendix I-9 | Appendix I-9 | Appendix I-9 | Appendix I-9 | Appendix I-9 | Appendix I-9 | Appendix I-9 |
| 9) Building 444 Acid Dumpsters | Appendix I-10 | Appendix I-10 | Appendix I-10 | Appendix I-10 | Appendix I-10 | Appendix I-10 | Appendix I-10 |
| 10) Bench Scale Treatment Unit No. 32 | Appendix I-11 | Appendix I-11 | Appendix I-11 | Appendix I-11 | Appendix I-11 | Appendix I-11 | Appendix I-11 |
| 11) Building 460 Acid Dumpsters And Solvent Dumpsters | Appendix I-12 | Appendix I-12 | Appendix I-12 | Appendix I-12 | Appendix I-12 | Appendix I-12 | Appendix I-12 |

NOTE: Appendix I-1 contains the Exposure Information Report for the solar evaporation ponds, present landfill, and west spray field.

Characterization of the solar evaporation ponds was completed during 1987. As contaminated soil and possibly the liner will remain in place at the time of closure, post-closure care of the solar ponds will extend for 30 years past the date of closure. Construction of interceptor trench water (ITW) storage tanks may be necessary for the solar evaporation ponds during post-closure care. If the tanks are necessary, the closure plan for the solar evaporation ponds will be amended to include the ITW storage tanks. The Solar Evaporation Ponds Closure Plan is presented in Appendix I-2.

The date of closure of the present landfill is presented in the Present Landfill Closure Plan. Hazardous constituent disposal in the landfill was eliminated in November, 1986. Solid wastes will no longer be accepted at the landfill after June 1, 1989. Post-closure care of the present landfill will extend for 30 years past the date of closure. Should variations in the water quality from the landfill be sufficient to require treatment of the east pond waters, a treatment system will be constructed to handle the contaminated waters at the plant site. If the treatment system is necessary, the closure plan for the present landfill will be amended to include the ground-water

treatment system. The Present Landfill Closure Plan is presented in Appendix I-3.

The date of closure of the west spray field is presented in the West Spray Field Closure Plan. If unacceptable concentrations of hazardous waste constituents and/or radionuclides remain in the soil at the time of closure and/or if ground water has been impacted, post-closure care will extend for 30 years past the date of closure. The West Spray Field Closure Plan is presented in Appendix I-4.

The date of closure of the original process waste lines is presented in the Original Process Waste Lines Closure Plan. If unacceptable concentrations of hazardous waste constituents and/or radionuclides remain in the soils at the time of closure and/or if ground water has been impacted, post-closure care will extend for 30 years past the date of closure. The Original Process Waste Lines Closure Plan is presented in Appendix I-5.

The container storage facilities covered under this permit application include the:

- o Property utilization and disposal container storage facilities,

- o Swinerton and Walberg Building 980 container storage facility,
- o Swinerton and Walberg contractor storage yard,
- o Building 885 drum storage area,
- o Building 881 drum storage area,
- o Building 865 drum storage area,
- o Building 883 drum storage area,
- o Building 334 cargo container area, and
- o Building 444/453 drum storage area.

The date of closure of the container storage facilities is presented in the Container Storage Facilities Closure Plan. The container storage facilities will be closed with no wastes remaining; therefore, post-closure care will not be required. The Container Storage Facilities Closure Plan is presented in Appendix I-6.

Characterization of adjacent soils at the Building 443 No. 4 Fuel Oil Tank will be conducted prior to and at the time of tank removal to define possible further activities necessary for closure. If necessary, soil removal will be conducted following characterization of the soil. The Building 443 No. 4 fuel oil tank will be closed with no wastes remaining;

therefore, post-closure care will not be required. If post-closure care is necessary, then the associated closure plan and the Post-Closure Care Permit will be amended as appropriate. The closure plan for the Building 443 No. 4 fuel oil tank is presented in Appendix I-7.

The date of closure of the hazardous waste storage area SWMU (Solid Waste Management Unit) No. 203 is presented in its closure plan. Located on top of and adjacent to the landfill, SWMU No. 203 stored drummed hazardous waste in cargo containers from November, 1986 to May, 1987. The cargo containers were moved to another waste storage facility in May, 1987. Due SWMU No. 203's relationship to the landfill (Plate B-1), post-closure care of SWMU No. 203 will be included in post-closure care for the landfill. It is not anticipated that a monitoring system unique to this unit will be needed. The closure plan for the hazardous waste storage area SWMU No. 203 is presented in Appendix I-8.

The date of closure for the original uranium chip roaster in Building 447 is dependent upon completion of the engineering studies for the new uranium chip roaster. The original uranium chip roaster, located in Building 447, will be

closed with no wastes remaining; therefore, post-closure care will not be required. The closure plan for this unit is located in Appendix I-9.

The date of closure for the acid dumpsters adjacent to Building 444 is presented in its closure plan. The acid dumpsters will be closed with no wastes remaining; therefore, post-closure care will not be required. If post-closure care is found to be necessary, the associated closure plan and the Post-Closure Care Permit will be amended as appropriate. The closure plan for this unit is located in Appendix I-10.

The bench scale treatment unit No. 32 is located in Building 881. Rockwell International will stop using this unit by the end of calendar year 1988. The bench scale treatment unit will be closed with no wastes remaining; therefore, post-closure care will not be required. The closure plan for the bench scale treatment unit No. 32 is presented in Appendix I-11.

The date of closure of both the acid dumpsters and solvent dumpsters located adjacent to Building 460 is presented in its closure plan. The acid and the solvent dumpsters will

be closed with no wastes remaining; therefore, post-closure care will not be required. If post-closure care is necessary, then the associated closure plan and the post-closure care permit will be amended as appropriate. The closure plan for the solvent and acid dumpsters is located in Appendix I-12.

I-2 POST-CLOSURE PLAN

1-2a Post-Closure Plan

1-2a(1) Ground-Water Monitoring Activities and Frequencies

The requirements for ground-water monitoring activities and frequencies are described in Section E of this permit application.

I-2a(2) Maintenance Activities and Frequencies

The requirements for facility inspections, cap and vegetation maintenance, drainage and diversion system maintenance, ground-water monitoring system maintenance, leachate collection, gas collection and security systems

maintenance, and responses to potential occurrences are presented Section F of this permit application.

I-2a(3) Administration of Post-Closure Care Permit

The post-closure care permit for the present landfill, the solar evaporation ponds, west spray field and original process waste lines will be kept at the Rocky Flats Plant:

- o Building 115, Rocky Flats Area Office, U.S. Department of Energy

The person responsible for storing and updating the copy of the closure plan kept in Building 115 is:

Mr. Albert E. Whiteman
Area Manager

His address and phone number are:

U.S. Department of Energy
Rocky Flats Plant
P.O. Box 928
Golden, Colorado 80402
Phone: (303) 966-2025

Mr. Whiteman is also responsible for updating copies of the post-closure care permit held off-site by sending additions or revisions by registered mail.

I-2b Contingent Post-Closure Plans

Contingent Post-Closure Plans have been addressed in Section G of this permit for the solar evaporation ponds, landfill, west spray field, and original process waste lines.

I-2c Specific Post-Closure Requirements

I-2c(1) Solar Evaporation Ponds

By the estimated time of permit approval, all liquids and sludge will have been removed from the solar evaporation ponds. Upon removal of the liquids and sludge, the solar evaporation ponds will be regraded and a cap will be installed. Post-closure inspection, maintenance and monitoring of the solar evaporation ponds will be performed for 30 years after closure. Inspections of the cap, vegetation, drainage and diversion system, and the ground-water monitoring system will be conducted on a quarterly basis during the post-closure care period.

Storage tanks may be constructed to contain the interceptor trench water and to replace Pond 207B South. Post-Closure care inspections will be done daily in accordance with CCR 264.194 and 40 CFR 264.194 to ensure that the tank is operating in accordance with design specifications and to provide early detection for leaks, cracks or wall thinnings. A description of the daily tank inspection to be performed will be located in Appendix F-1 if a tank is installed at the solar ponds.

I-2c(2) Present Landfill

During closure, drainage ditches at the landfill will be improved and a cap, a comprehensive ground-water monitoring system and a passive gas collection system will be installed. Post-closure inspection, maintenance and monitoring of the present landfill will be performed for 30 years after closure. Monthly inspections of the cap and drainage system will be conducted the first year after the cap has been installed to evaluate the effect of settlement or subsidence of the cap and drainage system and to observe the performance of the passive gas collection system and the ground-water monitoring system. Following the first year, quarterly inspections will be conducted of the cap, drainage

system, ground-water monitoring system and passive gas system.

Should variations in the water quality from the landfill be sufficient to require treatment of the east pond waters, a treatment system will be constructed to handle contaminated waters at the plant site. If it is constructed, a description of the specific post-closure care requirements will be located in Appendix F-2.

I-2c(3) West Spray Field

Dependent on the extent of soil contamination, cap may be installed over the west spray field. If necessary, post-closure inspection, maintenance and monitoring of the west spray field will be performed for 30 years after closure. To evaluate the site during the post-closure care period, inspections of the cap, vegetation, the drainage and diversion system, if installed and the ground-water monitoring system will be conducted on a quarterly basis.

I-2c(4) Original Process Waste Tanks

The tanks associated with the original waste lines will be closed with no wastes remaining (see Closure Plan, Appendix I-5). It is anticipated that a cap will be installed over some buried storage tanks and portions of the underground piping. Post-closure inspection, maintenance and monitoring of the original process waste lines will be performed for 30 years after closure. To evaluate the site during the post-closure care period, inspections of the cap, vegetation, drainage and diversion system, if installed, and the ground-water monitoring system will be conducted on a quarterly basis.

I-3 NOTICES REQUIRED FOR DISPOSAL FACILITIESI-3a Notice to Local Land Authority

As required by 40 CFR 265.119 and CCR 265.119, a survey plat indicating the location and dimensions of all disposal areas with respect to permanently surveyed benchmarks will be submitted to the Colorado Department of Health, Region VIII EPA, and Jefferson County. The plat will be prepared and certified by a professional land surveyor. The plat filed

with Jefferson County will contain a prominently displayed note which states the U.S. Department of Energy's obligation to restrict disturbance of the solar evaporation ponds, present landfill, west spray field and original process waste lines as specified in 40 CFR 265.117(c). A record of the type, location and quantity of waste disposed at each unit will be submitted with the plat. A note to accompany the survey plat is shown on Figure I-1. This notice to the local land authority will be filed concurrent with certification of closure, due to the nature of the investigations and closure activities regarding these units.

I-3b Notice in Deed to Property

As required by 40 CFR 265.120 and CCR 265.120 the U.S. Department of Energy will place a notation on its property deed that will, in perpetuity, notify any potential purchaser of the property that: (1) the land has been used to manage hazardous waste; (2) the land's use is restricted under 40 CFR 265.117(c); and (3) the survey plat and record of the type, location and quantity of hazardous waste disposed within the site, as required in 40 CFR 265.119, is on file with the Department of Health, Region VIII, EPA, and Jefferson County. Figure I-2 shows a notice in deed to

Date: October 5, 1988
Revision No.: 1
Section I

FIGURE I-1

NOTE TO ACCOMPANY THE SURVEY PLAT

This plat describes real property in which hazardous wastes have been disposed and buried in accordance with requirements of 40 CFR Section 265. Although the hazardous waste disposal facility is now closed, public health, environmental safety and regulations issued by the United States Environmental Protection Agency at 40 CFR Section 265.117(c) require that post-closure use of the property never be allowed to disturb the integrity of the final cover, liner(s) or any attached containment system unless it can be demonstrated that any proposed disturbance will not increase any risk to the public or the environment.

Your attention is directed to the accompanying list of wastes described by type and location, buried at the above-described facility.

Owner's or Operator's Signature

Date

FIGURE I-2
NOTICE IN DEED TO PROPERTY

TO WHOM IT MAY CONCERN:

Albert E. Whiteman the undersigned, of U.S. Department
Owner Street Address
of Energy, Rocky Flats Plant, P.O. Box 928, City of
Golden, County of Jefferson, State of Colorado,
hereby gives the following notice as required by 40 CFR
265.120:

1. I am, and since _____, 19__, have been in possession
in fee simple of the following described lands

Legal Description

2. Since _____, 19__, I have disposed of hazardous
chemical wastes under the terms of regulations promulgated
by the United States Environmental Protection Agency on/in
the above-described land.

3. The future use of the above-described land is restricted
under the terms of 40 CFR 265.117(c).

4. Any and all future purchasers of this land should inform
themselves of the requirements of the regulations and
ascertain the amount and nature of wastes disposed on the
above-described property.

5. I have filed a survey plat with the Department of
Health, Region VIII, EPA, and Jefferson County showing the
location and dimensions of landfill cells and a record of
the type, location and quantity of waste disposal within
each area of the facility.

property, as required by 40 CFR 265.120. This notice in deed to property will be filed concurrent with the certification of closure due to the nature of the investigations and closure activities regarding these units.

I-4 CLOSURE COST ESTIMATES AND FINANCIAL ASSURANCE
[CCR 100.41; 40 CFR 270.14(b)(15)]

State and Federal governments are exempt from the financial requirements imposed by Subpart H of 40 CFR [Section 265.140(c)]. Because the Rocky Flats Plant is a federally-owned facility, no cost estimates or financial assurance documentation are required for any of the hazardous waste units listed in Table I-1. In order to facilitate planning and implementation of the closure plans, non-binding cost estimates were developed for the hazardous waste units listed in Table I-1.

I-5 POST-CLOSURE COST ESTIMATES AND FINANCIAL ASSURANCE
[CCR 100.41; 40 CFR 270.14(b)(16)]

State and Federal governments are exempt from the financial requirements imposed by Subpart H of 40 CFR [Section 265.140(c)]. Because the Rocky Flats Plant is a federally-owned facility, no cost estimates for post-closure care and

CO7890010526

Date: October 5, 1988
Revision No.: 1
Section I

financial assurance documentation are required nor have any been prepared for the solar pond, present landfill, west spray field and original process waste line post-closure care permit.

SECTION J

RESERVED

CO7890010526

Date: October 5, 1988
Revision No.: 1
Section J

SECTION J

RESERVED

SECTION K
CERTIFICATION AND SIGNATURE

Date: October 5, 1988
Revision No.: 1
Section K

SECTION K

CERTIFICATION AND SIGNATURE

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this document and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

Date _____ Signature: _____
A.E. Whiteman
Area Manager, USDOE

Date _____ Signature: _____
D.J. Sanchini
President and General Manager
Rockwell International Corp.

Date _____ Signature: _____
M.A. Anderson, Ph.D., P.E.
Project Manager
Roy F. Weston, Inc.

Date _____ Signature: _____
D.M. Jubenville, P.E.
Vice President
Chen & Associates, Inc.

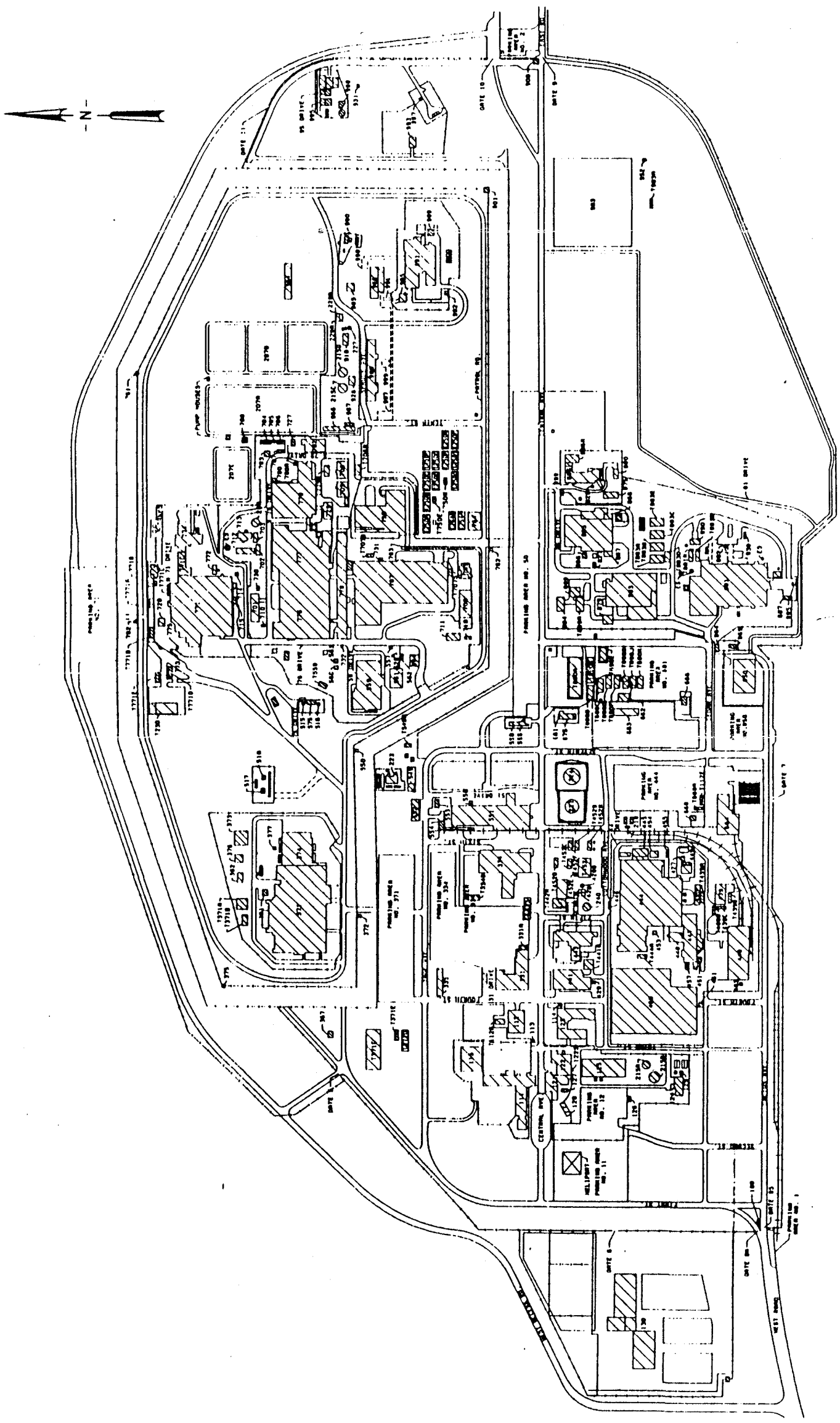


Figure G-1: Rocky Flats Site Plan



EXPLANATION

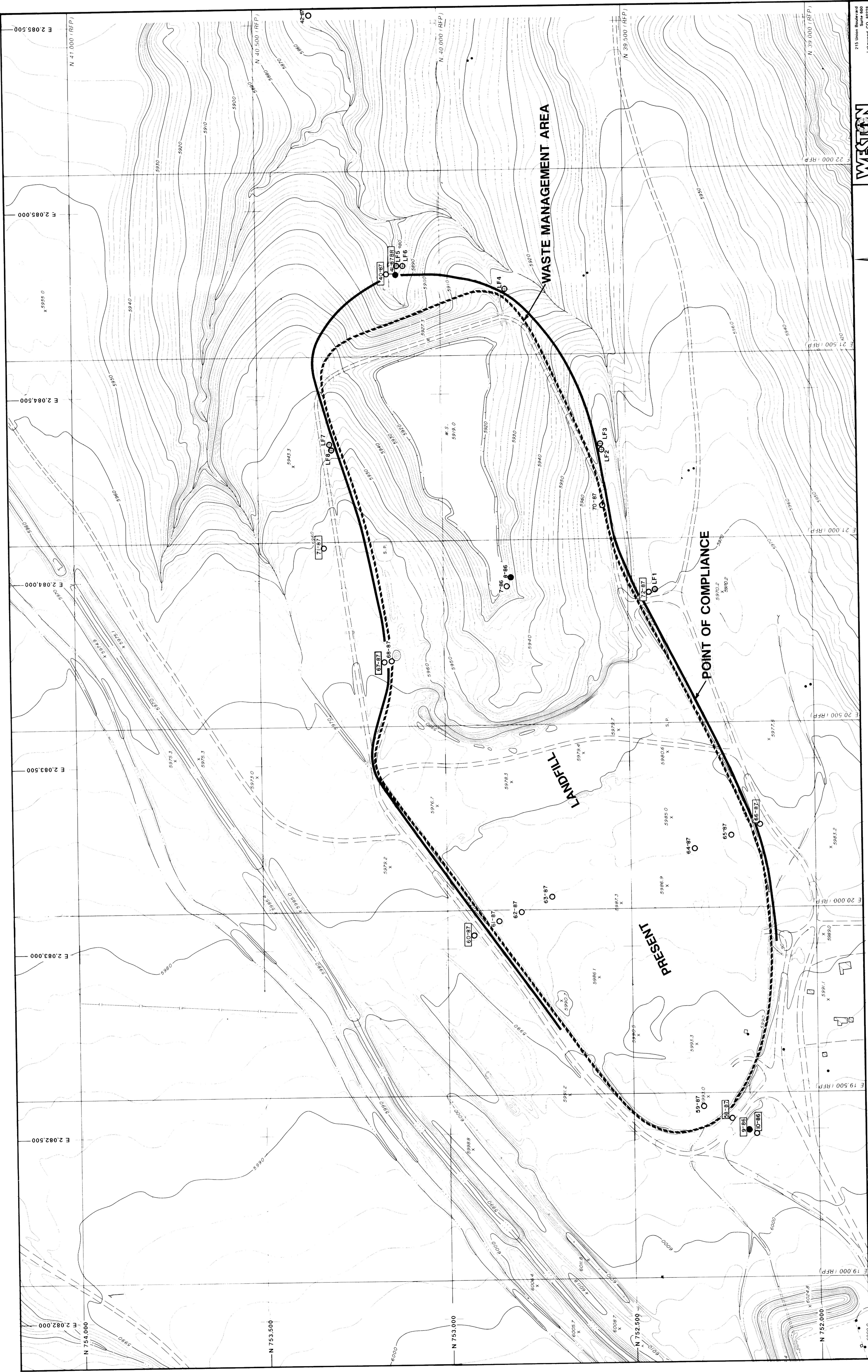
- Alluvial Monitor Well
- Bedrock Monitor Well
- Borehole Location
- Lines of Equal Water Table Elevation (feet above msl)
- ▨ Areas of Unsaturated Surficial Materials (Approximate)

WESTON
ENGINEERS
CONSULTANTS

215 Union Boulevard
Lawrence, KS 66044
(303) 840-6800

ROCKWELL INTERNATIONAL
Rocky Flats Plant
Golden, Colorado
Plate E-33:
WATER TABLE ELEVATIONS AT THE SOLAR PONDS
FOR NOVEMBER, 1987

October, 1988



N

Scale: 1" = 100'

0 100 200

Contour Interval = 2 feet

ROCKWELL INTERNATIONAL

215 Union Boulevard
Lakewood, CO 80228
(303) 286-5800

Rocky Flats Plant
Golden, Colorado

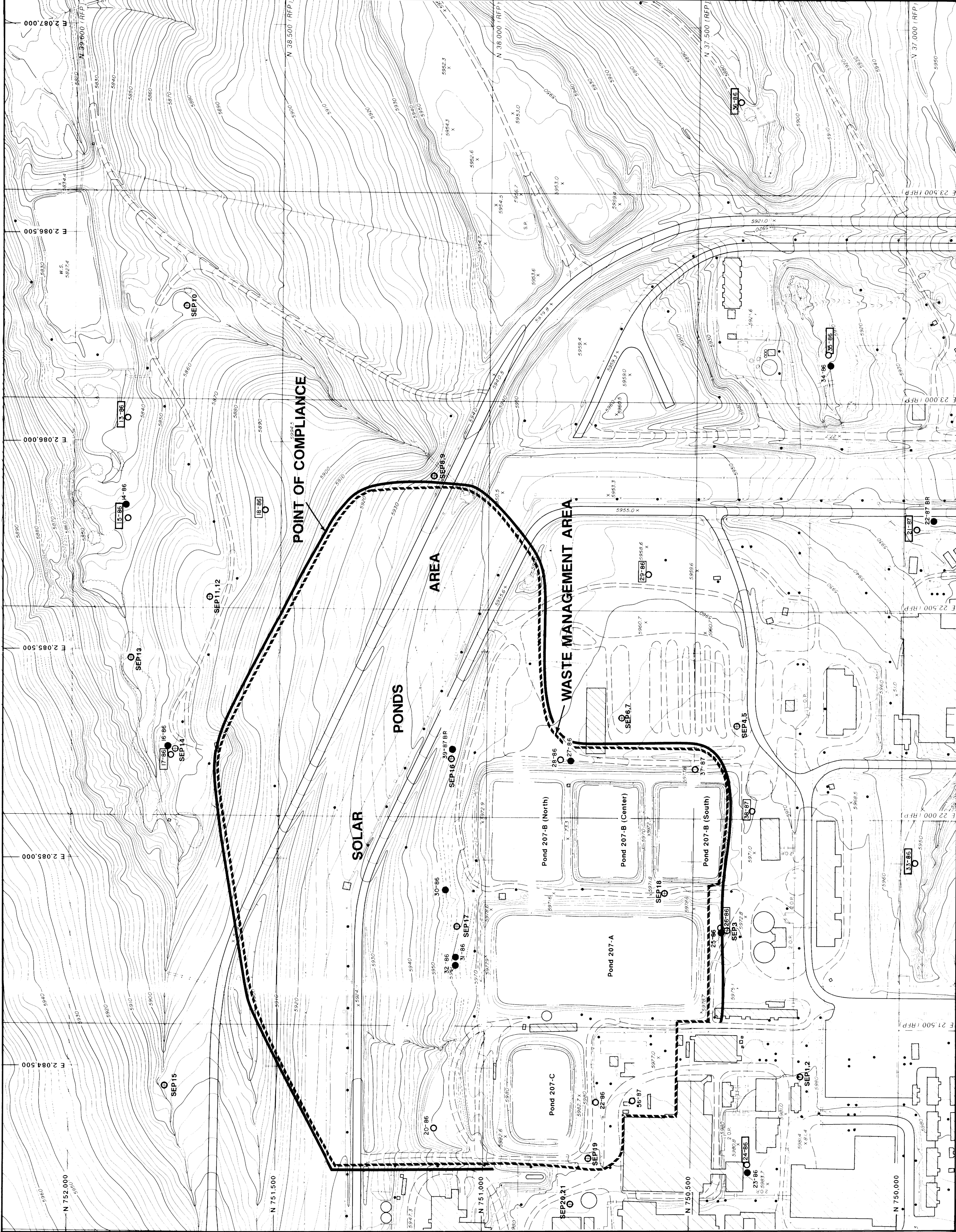
Plate E-35:
Landfill Area

PROPOSED POINT OF COMPLIANCE MAP
AND DETECTION MONITORING SYSTEM

October, 1988

EXPLANATION

- Waste Management Area
 - Point of Compliance
 - Proposed Well Location For Detection Monitoring System
 - Wells
 - Alluvial Monitor Well
 - Bedrock Monitor Well
- NOTE: 1986 Well locations resurveyed during 1988.
This plate reflects new locations and elevations.
- Proposed well designations are for presentation purposes only.
Final well designations may differ from those shown.



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Plate E-37:
Solar Ponds Area

**PROPOSED POINT OF COMPLIANCE
AND COMPLIANCE MONITORING SYSTEM**

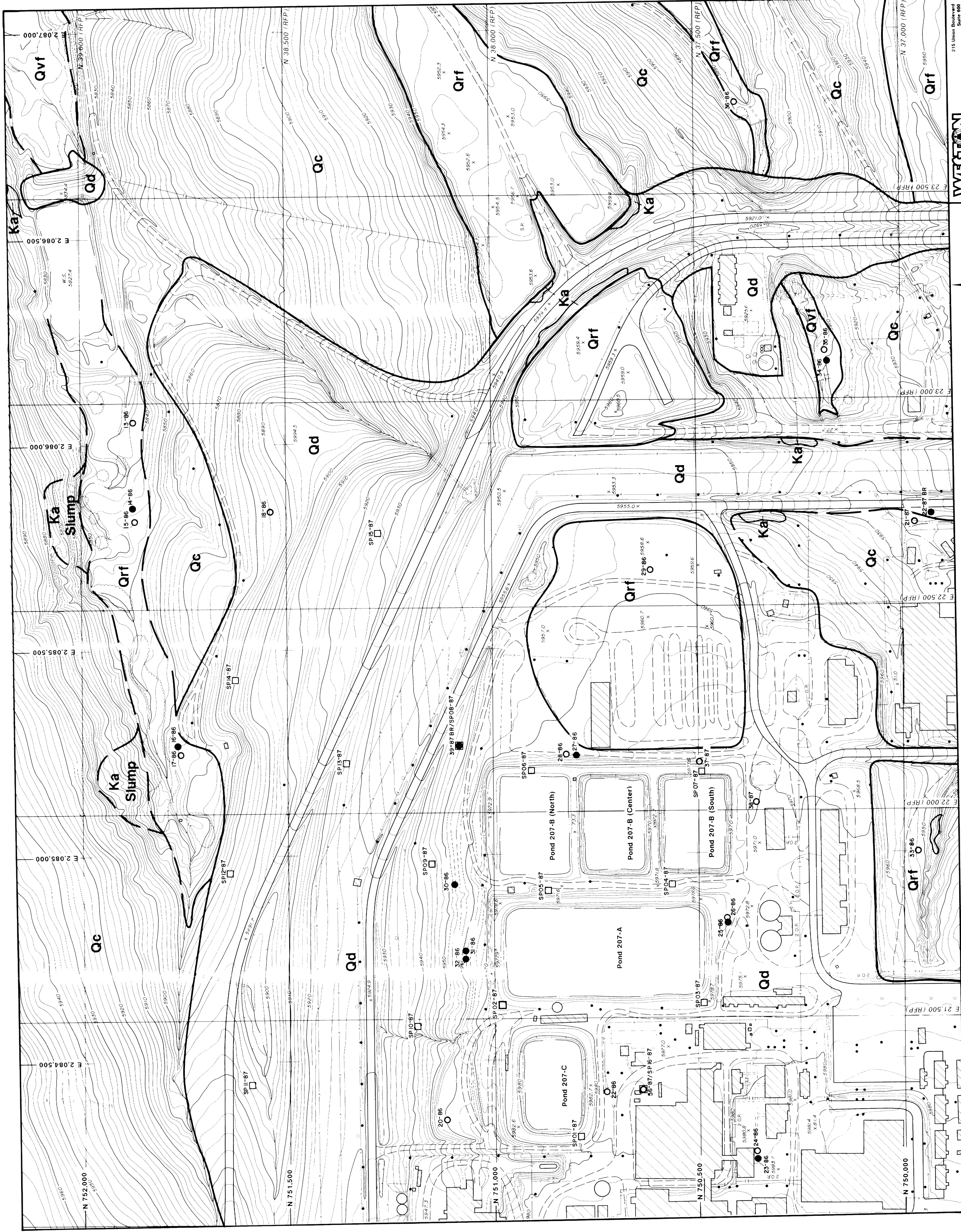
October, 1988

EXPLANATION

| | |
|---|----------------------------|
| Waste Management Area | 7-86 Alluvial Monitor Well |
| Point of Compliance | 8-86 Bedrock Monitor Well |
| Proposed Compliance Monitoring System Wells | |
| Compliance Monitoring System Wells | |

NOTE: Proposed well designations are for presentation purposes only.
Final well designations may differ from those shown.

Scale: 1" = 100'
Contour Interval = 2 feet



EXPLANATION

Quaternary

Artificial Fill

| | |
|----|-----------|
| Qc | Colluvium |
|----|-----------|

Qd **Disturbed Ground**

Rocky Flats Alluvium

Qvf Valley Fill Alluvium

Cretaceous

Ka **Arapahoe Formation (Claystone)**

Kass **Arapahoe Formation (Sandstone)**

64-87

65-878R
Bedrock Monitor Well

SP01-87



WESTON
DESIGNERS-CONSULTANTS
MANAGERS

ROCKWELL INTERNATIONAL

Rocky Flats Plant

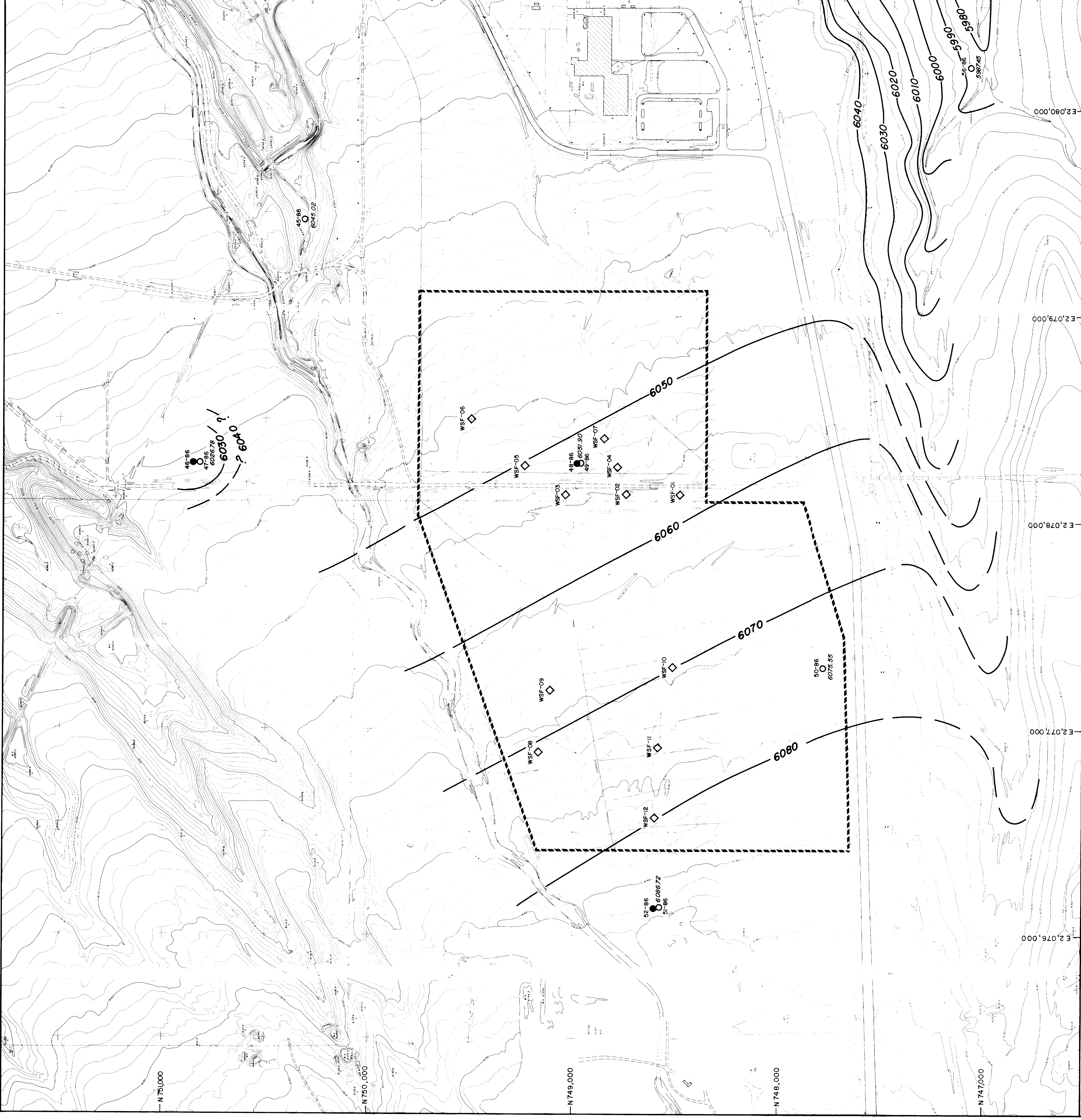
Golden, Colorado

96:

Solar Evaporation Ponds

SURFICIAL GEOLOGY MAP

October, 1988



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Lakewood, Colorado 80228
(303) 980-8800

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Rocky Flats Plant
Golden, Colorado
Plate E-25:
West Spray Field

WATER TABLE WITHIN SURFICIAL MATERIALS
APRIL - 1988
October, 1988

EXPLANATION

51-86 Alluvial Monitor Wells
52-86 Bedrock Monitor Wells
WSF-11 Test Pits (1988)

Line of Equal Water Table Elevations
(feet above mean sea level)


6026.78 Water Table Elevation

NOTE: 1986 Well locations resurveyed during 1988.
This plate reflects new locations and elevations.

Contour Interval: 2'
SCALE: 1"=200'

200' 0 200'

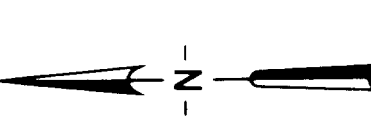




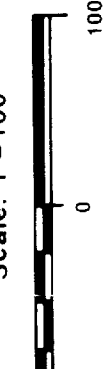
215 Union Boulevard
Suite 600
Lakewood, CO 80228
(303) 965-6500

ROCKWELL INTERNATIONAL
Rocky Flats Plant
Golden, Colorado
Plate E-27:

Solar Evaporation Ponds
CROSS SECTION LOCATION LINES AND
BEDROCK GEOLOGY

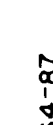







Scale: 1"=100'

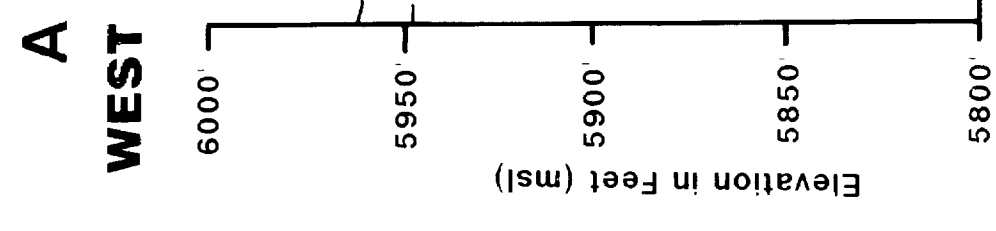


100 0 100
Contour Interval = 2 feet

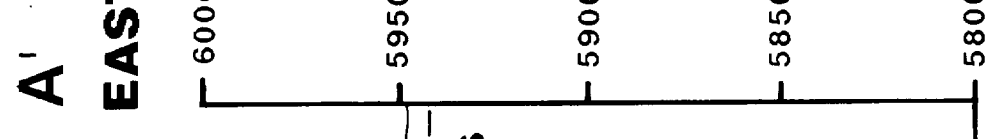
EXPLANATION

| | |
|---|--|
|  | Alluvial Monitor Well |
|  | Bedrock Monitor Well |
|  | Borehole Locations |
|  | Lines of Section |
|  | Subcropping Sandstone (Kass) (estimated extent) |
|  | Unshaded Areas are Subcropping Claystone (Ka) |

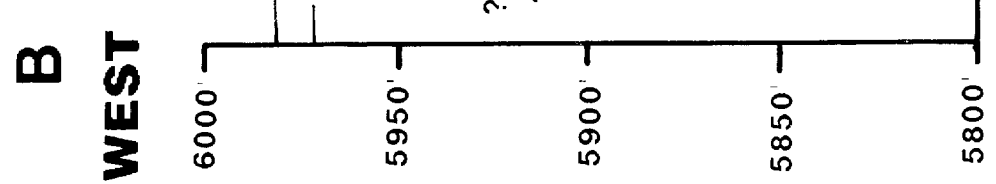
A WEST



A' EAST



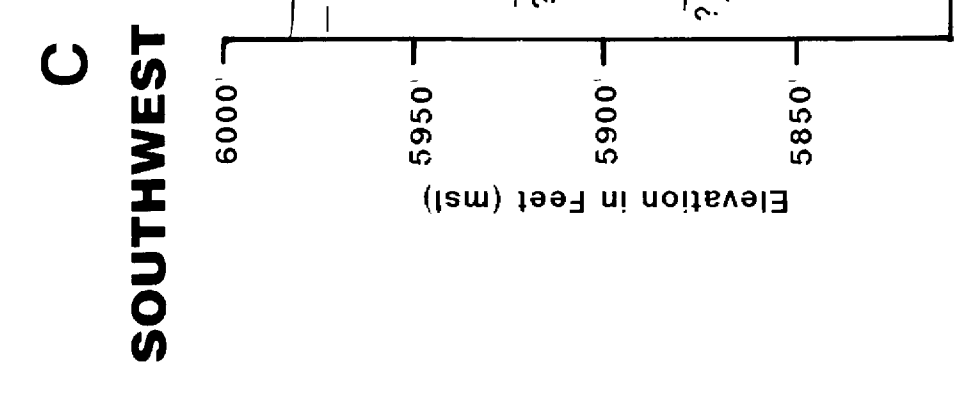
B WEST



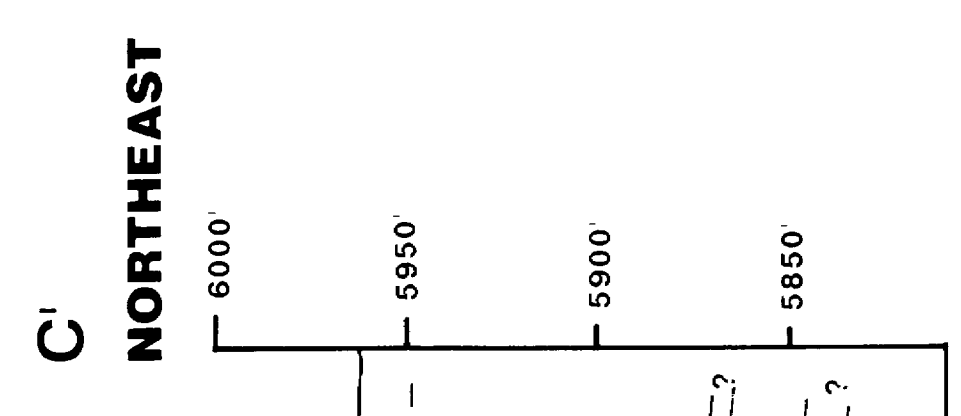
B' EAST



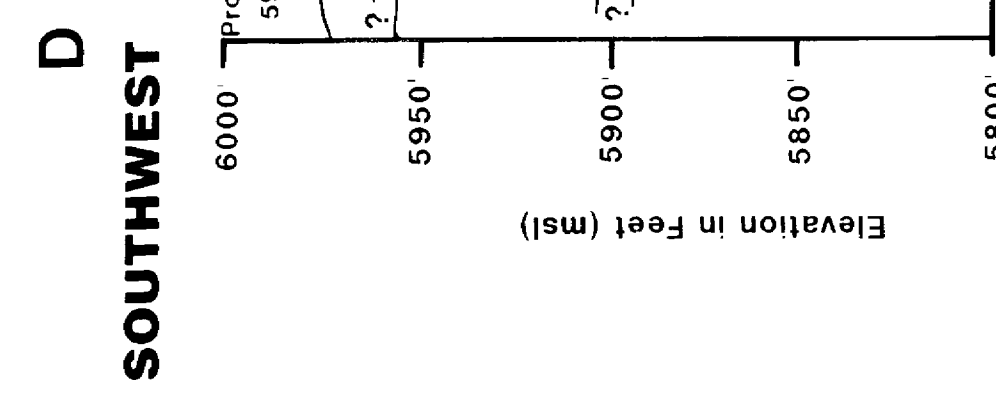
C SOUTHWEST



C' NORTHEAST



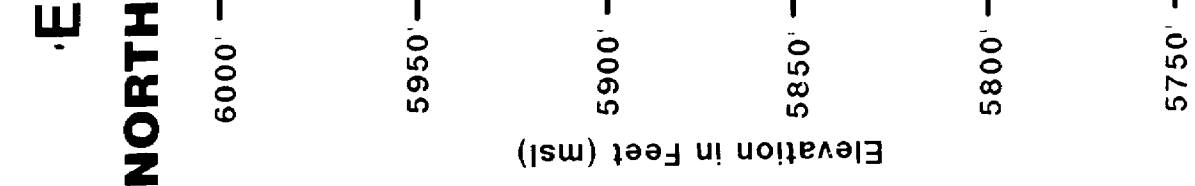
D SOUTHWEST



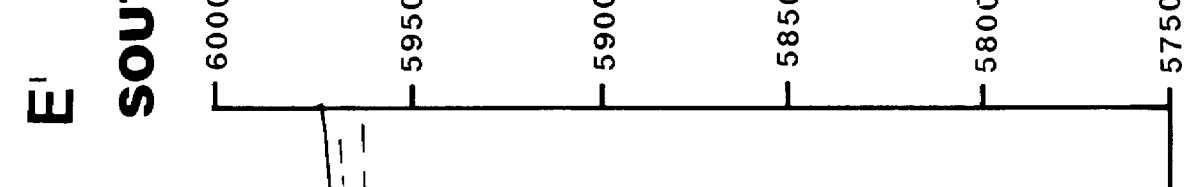
D' NORTHEAST



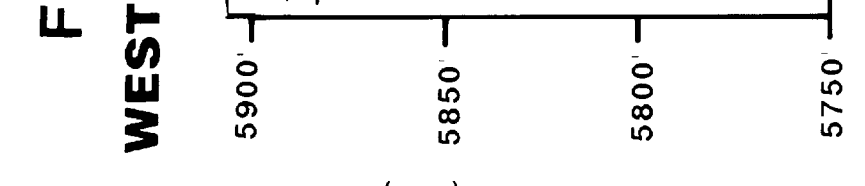
E NORTH



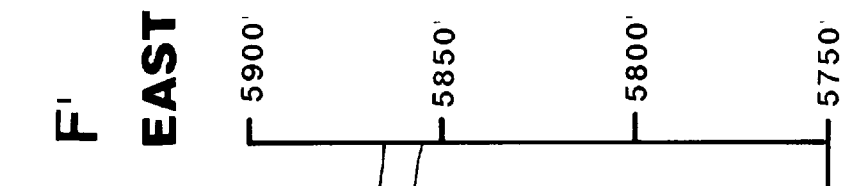
E' SOUTH



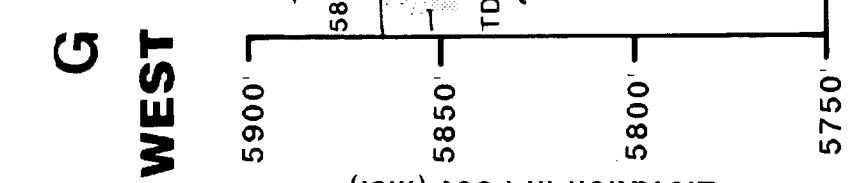
F WEST



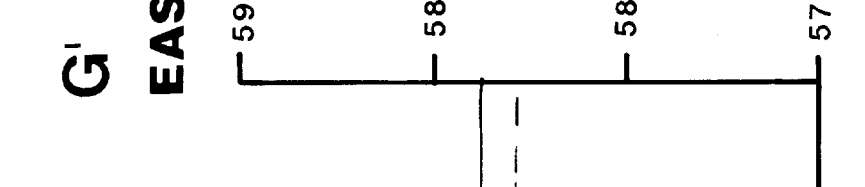
F' EAST



G WEST



G' EAST



EXPLANATION

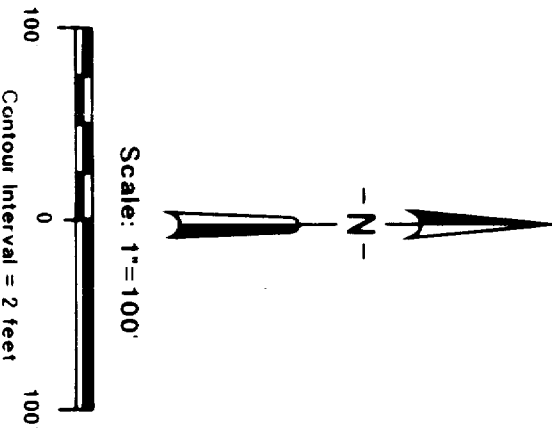
- QUATERNARY**
- Qc Colluvium
 - Qd Disturbed Ground
 - Qf Rocky Flats Alluvium
 - Qv Valley Fill Alluvium
 - Qw Sand and or Gravel
 - Qx Silt and or Siltstone
 - Qy Arapahoe Formation (Claystone)
 - Qz Arapahoe Formation (Sandstone & Siltstone)

- Scale**
- 50 feet
- 0 50 feet
- No Vertical Exaggeration
- Well Identification**
- 41-87
 - 5931.56
- Ground Surface Elevation (Surveyed)**
- Water Level (Measured 4.11.88)**
- Geologic Contact (dashed where inferred)**
- Screened Interval**
- Total Depth Drilled**



EXPLANATION

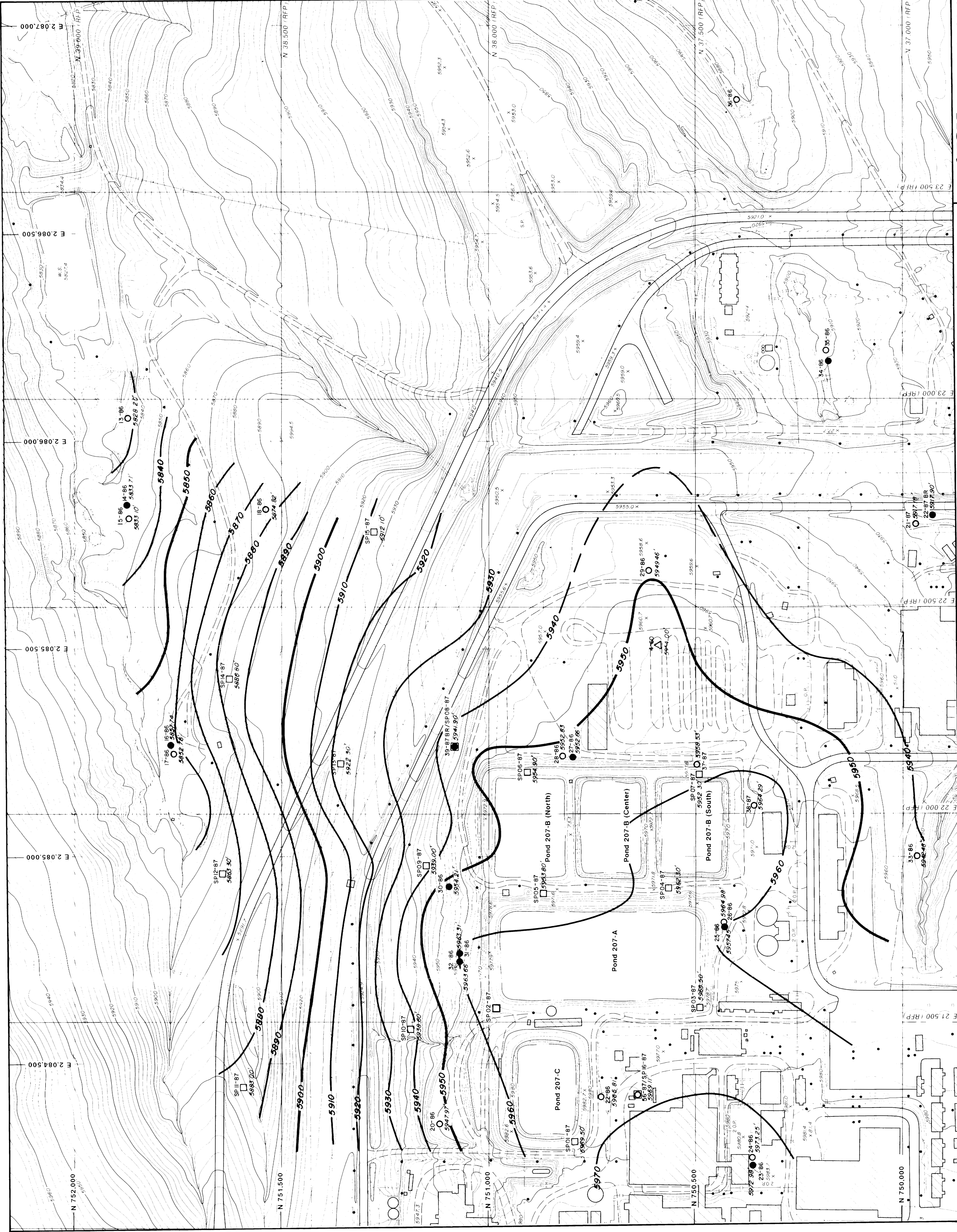
- Alluvial Monitor Well
- Bedrock Monitor Well
- Borehole Location
- SP-07-87
- Lines of Equal Water Table Elevation (feet above ms)
- Areas of Unsaturated Surficial Materials (Approximate)



WESTON
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ROCKWELL INTERNATIONAL
Rocky Flats Plant
Golden, Colorado
Plate E-30:
WATER TABLE ELEVATIONS AT THE SOLAR PONDS
FOR APRIL, 1987

October, 1988



WESTON
ENGINEERS/CONSULTANTS

215 Union Boulevard
Suite 600
Lakewood, CO 80228
(303) 760 6800

ROCKWELL INTERNATIONAL
Rocky Flats Plant
Golden, Colorado
Plate E-29:

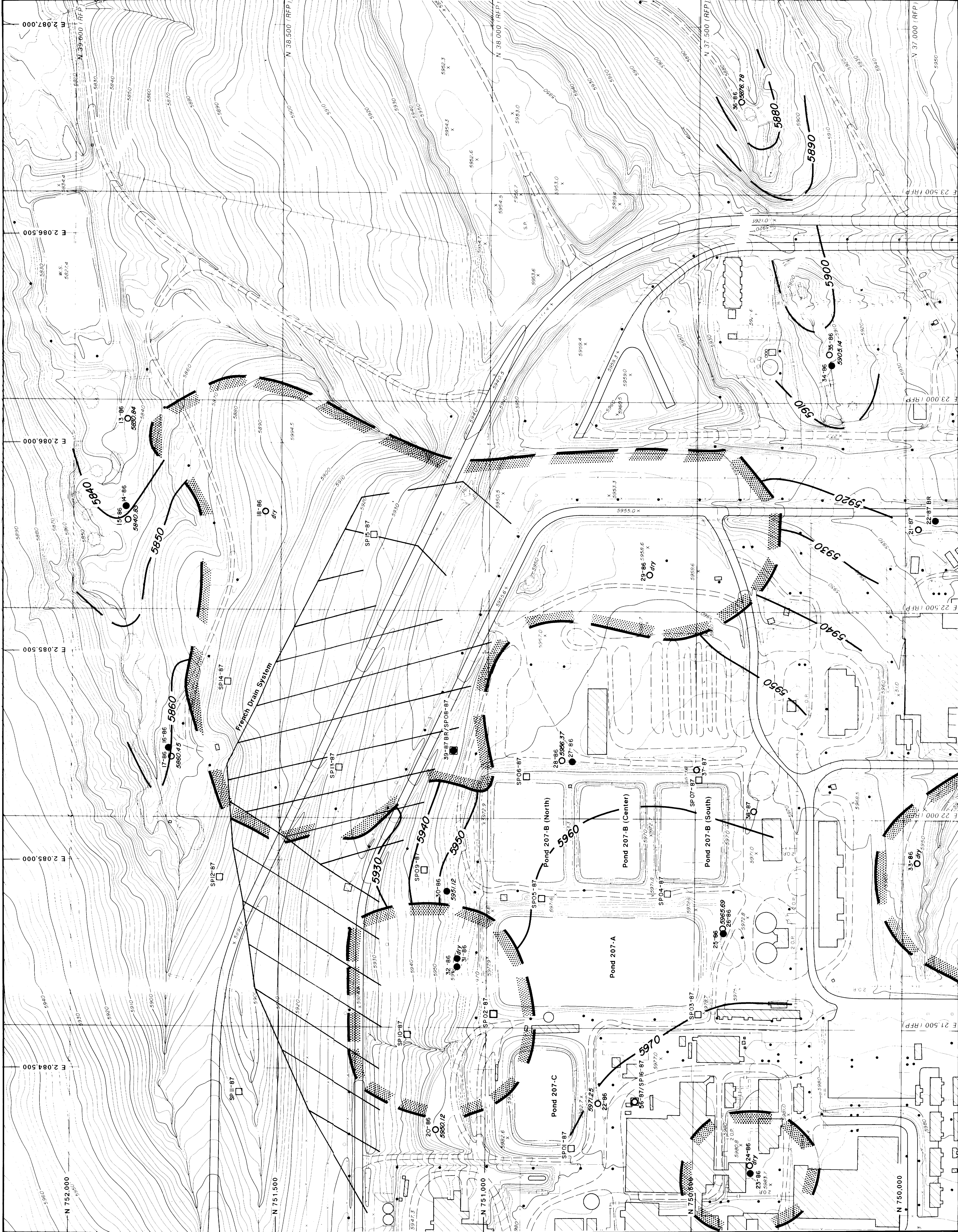
Solar Evaporation Ponds
TOP OF BEDROCK ELEVATION BENEATH
SURFICIAL MATERIALS

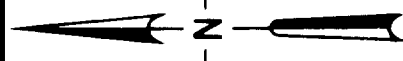
October, 1988

Scale: 1"=100
Contour Interval = 2 Feet

EXPLANATION

54-87 Alluvial Monitor Well
65-87BR Bedrock Monitor Well
SP01-87 Borehole Locations
Top of Bedrock Elevations
Pre 1974 Wells





Scale: 1"=100'

0 100 100

Contour Interval = 2 feet

EXPLANATION

- Alluvial Monitor Well
- Bedrock Monitor Well
- Borehole Location
- Lines of Equal Water Table Elevation (feet above msl)
- Areas of Unsaturated Surficial Materials (Approximate)

WESTON

ROCKWELL INTERNATIONAL

Rocky Flats Plant

Golden, Colorado

Plate E-32:

WATER TABLE ELEVATIONS AT THE SOLAR PONDS

FOR AUGUST, 1987

October, 1988